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Liquidity and Stock Returns

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MA Finance and Investment

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Abstract

This paper provides an analysis of liquidity premium using monthly data of the U.K. stock market from 1993 to 2008. The liquidity measures are the relative bid-ask spread and the turnover rate. Overall the evidence suggests that there is no significant relation between liquidity level and asset returns. In the time-series analysis in which a portfolio method is involved, for one-month holding period there is no significant liquidity premium associated with either liquidity measure. Consistently, the results of cross-sectional regressions also suggest that liquidity does not have explanatory power in the cross-sectional variation of asset returns and, if anything, the opposite is observed. In addition, the book-to-market ratio proves to be efficient in explaining expected return, whereas the influence of firm size on returns is only significant in January months over the second half of sample period from 2001 to 2008.

Content

Introduction

"The liquidity of an asset is the ease and speed with which it can be sold at fair market value in a timely fashion" (Bodie et al, 2008). Liquidity is not a directly observable variable. Part of it is the cost of engaging in a transaction, of which the bid-ask spread is one important component. Anther part of is price impact, which is the adverse movement in price investors would encounter when attempting to execute a large trade (Bodie et al, 2008). Additionally, another two parts of liquidity are trading quantity, particularly trading volume, and trading speed (Liu, 2006). In contrast, illiquidity could be measured in part by the discount from fair market value a seller must accept if the asset is to be sold quickly. A perfectly liquid asset is one that would not entail any illiquidity discount (Bodie et al, 2008). Asymmetric information could be one of the reasons which give rise to illiquidity. Asymmetric information creates a risk for uninformed traders because they are unable to optimally form portfolios. While both informed and uninformed traders will optimally diversify their investments, the uninformed do not know the correct (full information) weights to hold of each asset in equilibrium. This results in the uninformed holding too much of the "bad" assets and too little of the "good" assets in equilibrium. It is due to the fact that the uninformed cannot completely diversify that the informed are able to earn a return on their information. If the uninformed investors become aware of this, they could choose not to trade, which leads to illiquidity (Easley et al., 2004).

Liquidity was not appreciated as an important element in security markets, presumably due to the relatively small trading cost per transaction compared with the large costs of trading assets such as real estate (Bodie et al, 2008). However, after Amihud and Mendelson (1986) documented a significant relationship between liquidity and asset returns, liquidity, in particular, has growingly attracted the attention of traders, regulators, exchange officials as well as academics. An increasing number of studies have shown that liquidity is an important attribute of an asset that influences investors' investment decisions (e.g., Eleswarapu and Reinganum (1993), Brennan and Subrahmanyam (1996), Datar et al (1998), Amihud (2002), Acharya and Pedersenb (2005), and Liu (2007)). It is generally accepted that less liquid stocks demand a higher rate of return than more liquid stocks to compensate for the illiquidity.

While most studies have been concentrated on the U.S. equity market, limited efforts have been made to examine the U.K. market. This paper attempts to fill in this gap by conducting an analysis using monthly data from 1993 to 2008 of the U.K. stock market. The major goal is to investigate whether the liquidity level of assets has distinguished impact on stock returns with or without controlling for the well-known determinants of stock returns such as firm size and book-to-market ratio. To investigate this impact, time-series analysis and cross-sectional analysis are performed. The measures of liquidity in this paper are relative bid-ask spread and turnover rate. Unlike studies that provide evidence of liquidity effect, the key finding

of this study is that there is no significant relation between liquidity and asset returns. First of all, in the time-series analysis a portfolio method is adopted and adjusted CAPM is run. Based on the results of the adjusted CAPM, for one-month holding period there is no significant liquidity premium associated with either liquidity measure. Secondly, consistent with the portfolio analysis outcomes, the results of cross-sectional regressions also suggest that liquidity does not have explanatory power in the cross-sectional variation of asset returns and, if anything, the opposite is observed. Over the whole sample period, the effect of the relative bid-ask spread on stock returns is not significantly positive, whereas the turnover rate is positively related to returns with or without controlling for the book-to-market ratio and firm size. To test the robustness of the results, the whole sample period is divided into two non-overlapping sub-periods of equal length. Similar results are presented in the sub-period analysis. Following that, to test whether or not there is a seasonal component, only the months of January are considered in the cross-sectional regressions. In this scenario, the relative bid-ask spread still has no predictive power. The relation between the turnover and return remains significantly positive, which is restricted to the first sub-period 1993 to 2000. In addition, the book-to-market ratio proves to be efficient in explaining expected return, whereas the influence of firm size on returns is only significant in January months over the second half of sample period 2001 to 2008.

The remainder of this paper is organized as follows: Section 2 presents literature

reviews centering the liquidity effect on assets returns; Section 3 discusses the methodology and describes the data; Section 4 examines liquidity premium by conducting time-series regressions and cross-sectional regressions and highlights the empirical results; finally Section 5 offers conclusion.

Literature Review

It is widely accepted that liquidity or transaction cost has considerable impact on investment decisions. Constantinides(1986) shows that the demand for assets is sensitive to transaction costs. In particular, transaction costs have a second-order effect on equilibrium asset re-turns: investors accommodate large transaction costs by drastically reducing the frequency and volume of trade. It turns out that an investor's expected utility of the future consumption stream is insensitive to deviations of the asset proportions from those proportions that are optimal in the absence of transaction costs. Hence, a small liquidity premium is sufficient to compensate an investor for deviating significantly from the target portfolio proportions. Early studies have tried to capture transaction cost in terms of bid-ask spread and focuses on what determines or affect the spread and the effect of spread on asset returns (Datar et al. 1998). Demsetz (1968) regards the bid-ask spread as a transaction cost to the trader for immediacy and studies the data of NYSE. He points out that the cost of exchanging a security declines as trading activity in that security increases. It could be the case that adding additional securities or different commodities will increase transaction costs and eventually limit the number of securities or assets traded in a given market. Copeland and Galai (1983) show that the bid-ask spread is a positive function of the price level and return variance, a negative function of measures of market activity, depth, and continuity, and negatively correlated with the degree of competition.

Amihud and Mendelson (1986), henceforth A&M, make a breakthrough by formalizing an important link between asset pricing and liquidity. They study the effect of the bid-ask spread on asset pricing with data of NYSE stocks for the period of 1961-1980. Their analysis assumes a market in which investors differ in their expected holding periods and assets have different spreads. A&M show that illiquid assets, in equilibrium, could be held by investors with longer investment horizons. They propose the hypothesis that "average portfolio risk-adjusted returns increase with their bid-ask spread and the slope of the return-spread relationship decrease with the spread" (1986, p.224). Then they conducted empirical test and find out that the results support their hypothesis. In the empirical tests, portfolios are formed by grouping stocks according to their spread and relative risk. Each stock in the portfolios must have at least eleven years of history in which five year is a beta estimation period, five years is a portfolio formation period and one year is a cross-section test period. For each year there are 49 portfolios and there are 20 years in total. In order to allow for difference over cross-sectional units (portfolios) and over time, two sets of dummy variables which define portfolios and years are employed. The bid-ask spread variable is replaced by a mean-adjusted variable to allow for the different slope coefficients across spread groups. With these variables, the pooled cross-section and time-series estimation is performed. The results are consistent with the hypothesis that A&M initially proposed. In addition, considering the impact of firm size on asset returns and the negative relationship between spread and firm size, models are re-estimated adding a new explanatory variable, firm size.

The size effect is insignificant as the coefficient of the natural logarithm of size becomes significant only when all the spread-related variables are removed altogether. In contrast, spread variables remain highly significant even when the size variable is in the regression model. Based on their study, A&M make suggestions that firms could increase the liquidity of their securities to reduce their opportunity cost of capital.

Since A&M (1986), numerous researchers study the relation between liquidity and asset return. However, the results are not unanimous. Some studies support the liquidity premium theory whereas other researches have inconsistent results.

Fama and French (1992) argue that liquidity is important but the combination of size and book-to-market ratio can subsume the effect of liquidity.

Eleswarapu and Reinganum (1993), henceforth E&R, suggest a strong January component in liquidity premiums. E&R use data of NYSE firms over the period of 1961-1990, which extends the A&M sample by ten years, to obtain stock returns, firm betas and the relative bid-ask spread. In the first part of their empirical analysis, the calculation method of the average spread for a particular stock and the criteria used to form portfolios are the same as those in A&M (1986). In stead of pooled cross-section and time-series regression, E&R (1993) use cross-sectional regression and estimate the average of monthly regression coefficients in a Fama and MacBeth

(1973) framework. Evidence shows that the liquidity premium is reliably positive only in the month of January during the test period. However, the coefficient of size is not significantly different from zero in January in the presence of spread and beta. The data of the sub period 1981-90, which can be viewed as an extension of the original A&M sample, are also investigated. Consistent of the results of the overall 1961-90 period, the liquidity premium is positive in January of the sub-period and negative in non-January months and also for all months combined. However, Chen and Kan (1989) raise concerns that the A&M data selection criteria could lead to spurious spread effect as it constrains the market risk premium to be constant over the 30-year period (*see Elsewarapu and Reinganum 1993, p.377*). Considering that, in the second part, E&R (1993) modify the portfolio formation technique. The portfolios are formed using three years of return data in stead of eleven years, and hence the number of stocks included in the analysis is increased. Another change from the A&M framework is the use of unconditional portfolio betas in the cross-sectional regressions. With the enlarged sample, the basic results that liquidity premium is present only in January still hold. In the overall period 1961 to 1990, size is the only variable that is significant in the presence of spread and beta. E&R (1993) concluded that in the 1961-1990 period, the liquidity premium is reliably positive only during the month of January and the reason is not clear.

Brennan & Subrahmanyam (1996), henceforth B&S, examine the liquidity premium by separating transaction cost into variable- and fixed-cost components. Their findings

provide weak evidence for the A&M model. In particular, B&S find a concave relation between asset returns and transaction costs in terms of the variable cost component. However, the relation between asset returns and estimated fixed costs is convex, which is not consistent with A&M.

Vayanos (1998) studies the effect of transaction cost on asset prices. He assumes an overlapping generations economy with riskless, liquid bond, and many risky stocks carrying proportional transaction costs. It is found that a stock's price may increase in transaction costs and a more frequently traded stock may be less adversely affected by an increase in transaction cost. An increase in transaction costs will lead to investors buying fewer shares or holding them for longer periods. Either effect can dominate. In addition, he points out that a stock's turnover decreases in the stock's transaction costs and increases in the transaction costs of other stocks.

Brennan, Chordia, and Subrahmanyam (1998) use the dollar volume traded as their measure of liquidity. They also use the Fama and French (1993) factors of size and book-to-market ratio and include a measure of market liquidity as one of firm characteristics. Their results show that dollar volume of trading is statistically significant on the NYSE and AMEX except on Nasdaq. Nevertheless, as pointed out by Chan and Faff (2005), the measure of liquidity used in the paper does not account for the number of shares on issue and the use of the dollar volume would have a size bias.

Datar et al. (1998) provide an alternative test of A&M model using the turnover rate as a proxy for liquidity premium rather than the relative bid-ask spread. Their finding sheds light on A&M model as it demonstrates that liquidity have significant impact on the cross-sectional variation in stock returns and the effect persists after controlling for the firm size, book to market ratio and the firm beta. The dataset is composed of all non-financial firms on the NYSE from July 31, 1962 to December 31, 1991. A series of cross-sectional regressions of stock returns on turnover rate, book-to-market, size and beta are run individually and jointly. In the results, turnover rate is negatively related with returns, which support the findings of A&M, and the relation persists in the presence of firm size, beta or book-to-market. To examine the seasonal behavior of the liquidity premium, regressions are repeated using data of non-January months. The results refute the findings of E&R (1993) and indicate that the relation between liquidity and returns is persistent in the months of January as well as during the rest of the year and remain significant with the presence of firm size, beta and book-to-market. When the dataset is divided into two non-overlapping sub-periods of about equal length, relation between turnover rate and returns is stable across sub-periods and across all models with a statically significant coefficient.

Chui and Wei (1999) (*see Chan and Faff 2005, p.433*) provide a complementary paper to Datar et al. (1998). Using similar methods and variables to Datar et al. (1998) they test the liquidity hypothesis of Hopenhayn and Werner (1996) on stocks listing on NYSE, AMEX, and Nasdaq. It is reported that the turnover ratio and

book-to-market variable significantly predict expected cross-sectional returns. In contrast to Datar et al. (1998), however, they find that the liquidity effect is only significant in non-January months.

Lee and Swaminathan (2000) investigate the usefulness of trading volume, as measured by the turnover ratio, in predicting cross-sectional returns. Their finding suggests that firms with high (low) past turnover ratios exhibit many glamour (value) characteristics, earn lower (higher) future returns. They also argue that trading volume is unlikely to be a liquidity proxy. Although high (low) volume firms earn lower (higher) future returns, the opposite is true in the past. Trading volume is not highly correlated with relative bid-ask spread or firm size, and the volume effect is independent of the firm size effect.

Jones (2001) documents evidence that the transaction cost measures, spreads and turnover, which are also proxies for liquidity, predict stock returns one year or more ahead. High spreads predict high stock returns, while high turnover predicts low stock returns. These liquidity variables dominate traditional predictor variables, such as the dividend yield. The evidence suggests that liquidity is an important determinant of conditional expected returns.

Amihud (2002) proposes a new measure of liquidity. It is the average across stocks of the daily ratio of absolute stock return to dollar volume, which can be interpreted as

the daily price response associated with one dollar of trading volume. This measure other than other finer measures is adopted mainly due to its easier availability. The cross-sectional test confirms that illiquidity has a positive effect on expected stock returns.

Huang (2003) develops a study which helps understand why some securities have high liquidity premium, despite of low turnover frequency. He studies an equilibrium in which agents face surprise liquidity shocks and invest in liquid and illiquid riskless assets. He shows that the return of the illiquid security is risky due to the random holding horizon from liquidity shocks. The equilibrium premium for such risk is determined by the constraint that agents face when borrowing against future income; it is insignificant without borrowing constraint, but can be very high with borrowing constraint. As a result, illiquidity can have large effects on asset returns when agents face liquidity shocks and borrowing constraints.

Korajczyk and Sadka (2004) investigate how the profitability of particular momentum strategies is affected by trading costs, including price impact. In particular, they estimate the size of a momentum-based fund that could be achieved before abnormal returns are either statistically insignificant or driven to zero. By investigating several trading cost models and momentum portfolio strategies, they find that the estimated excess returns of some momentum strategies disappear after an initial investment of $4.5 to over $5.0 billion is engaged (by a single fund) in such strategies. The

statistical significance of these excess returns disappears after $1.1–$2.0 billion is engaged in such strategies. Therefore, they conclude that transaction costs, in the form of spreads and price impacts of trades, do not fully explain the return persistence of past winner stocks exhibited in the data.

With a new measure of liquidity, Liu (2006) documents a significant and robust liquidity premium over the sample period 1963 to 2003, and shows that the premium is distinct from systematic market risk and the Fama–French three-factor risks. As Liu (2006) pointed out, the definition of liquidity has four dimensions, namely, trading quantity, trading speed, trading cost, and price impact. However, the measures of liquidity employed by previous studies typically focus on one dimension of liquidity, such as the trading cost dimension (e.g., A&M (1986)), the trading quantity dimension (e.g., Datar et al. (1998)) and the price reaction to trading volume (e.g., Amihud (2002) and Pastor and Stambaugh (2003)). Therefore, he propose a new liquidity measure for individual stocks, which is defined as the standardized turnover-adjusted number of zero daily trading volumes over the prior 12 months. “This measure captures multiple dimensions of liquidity such as trading speed, trading quantity, and trading cost, with particular emphasis on trading speed” (Liu, 2006, p.2). Using the same measure of liquidity developed in Liu (2006) and together with daily data from 1926 to 2005, Liu (2007) conducted a detailed analysis of liquidity. In the research, he find that the premium associated with the new measure of liquidity is also significant for different holding periods over 1926 to 1963. Neither the capital asset pricing model

nor the Fama-French three-factor model is able to explain the liquidity premium. For the premiums associated with size and book-to-market, both are insignificant beyond the one-month holding period. For other liquidity measures, the turnover rate has no predictive power for returns and the premium associated with the return-to-volume ratio is not robust to the CAPM. The bid-ask spread measure does not predict return significantly over 1983 to 2005.

Rather than using American data, Anderson, Clarkson, and Moran (1997) investigates the role of a liquidity factor using Australian data. With data of a set of 50 small stocks and 50 large stocks over the period 1982 to 1989, they examine the influence of size, seasonality, information, and liquidity risk on returns in a multiple regression framework. Using the average monthly dollar value of trading as their proxy for liquidity, they report that liquidity is not statistically significant. Similar to Anderson, Clarkson, and Moran (1997), Chan and Faff (2005) also study the Australian market. They examine the asset-pricing role of liquidity (as proxied by share turnover) in the context of the Fama and French (1993) three-factor model. In contrast, with monthly data from 1990 to 1998, their results turn out to be supporting the overall favorability of the liquidity-augmented Fama–French model.

While most studies focus on liquid market, such as the United States, Rouwenhorst (1999) examines the cross-sectional returns in twenty emerging market using return data of 1750 stocks. Different from earlier studies, He ranks stocks by country on

turnover rate to study return premium. At the beginning of each month, stocks are grouped into three portfolios (top 30, middle 40, and bottom 30 percent). He reports that the return factors that explain cross-sectional stock returns in developed markets also explain emerging markets cross-sectional returns. Furthermore, there is no evidence of relation between expected return and turnover. Nonetheless, beta, size, momentum and value are positively cross-sectionally correlated with turnover in emerging market, which suggests that the return premium do not simply reflect a compensation for liquidity. Bekaert et al (2007) also point out that the emerging market deserves further research as the liquidity effects may be particularly strong. Consequently, they conduct a research to examine the impact of liquidity on expected returns in emerging market. Their results suggest that local market liquidity is a substantial driver of expected returns in emerging markets and the liberalization process has not completely removed its impact. The main measure employed in the research is a transformation of the proportion of zero daily firm returns, which is proved to be positively correlated with bid-ask spreads (where available) and negatively correlated with equity market turnover. It is found that this measure significantly predicts returns while alternative measures of liquidity such as turnover do not. Furthermore, unexpected liquidity shocks are positively correlated with returns and negatively correlated with dividend yields.

Notably, the liquidity level and liquidity risk of assets are two related but different concepts and the latter could have impact on the former. Pastor and Stamburgh

(2001) use a “liquidity beta” that measures a stock’s sensitivity to innovations in market liquidity (i.e., liquidity risk) to investigate expected stock returns. The measure relies on order flow and volume related return reversals as its measure of liquidity. Thus, the less the expected stock return reversal for a given dollar volume, the more illiquid is the stock. They assign stocks into one of 10 liquidity portfolios on a post-ranking basis. It is found that stocks whose returns are more exposed to market wide liquidity fluctuations command higher expected returns after adjusting for exposures to the market return as well as size, value and momentum factors. Also, smaller stocks are less liquid and are more sensitive to their measure of market liquidity. Studying both the liquidity level and liquidity risk of assets, Acharya and Pedersenb (2005) suggests that the effects of liquidity level and liquidity risk are separate. In particular, they find that the required return of a security is an increasing function of the covariance between its illiquidity and the market illiquidity and a decreasing function of the covariance between its illiquidity and market returns.

Some researchers have also argued that coskewness risk could capture liquidity. Recent studies show relations between conditional skewness and the cross-sectional variation of expected returns and also relations between skewness and the relative change in the turnover ratio (e.g., Harvey and Siddique (2000), and Chen, Hong, and Stein (2001)). To investigate whether liquidity is captured by coskewness risk, Nguyen and Ghosh (2007) estimate the intercepts from the time-series regressions using the four-factor and three-moment models for 25 portfolios sorted by size and the

turnover ratio, by the book-to-market ratio and the turnover ratio, and by turnover only. Their empirical results lend support to liquidity effect. It is demonstrated that more liquid stocks demand higher expected returns than less liquid stocks after controlling for risk in the four-factor and three-moment models. In addition, within each size or book-to-market group, they document a consistent decrease in the intercepts from low-liquidity to high-liquidity portfolios, which indicates that size and book-to-market ratio do not relate to liquidity. Furthermore, in their robust check, it is demonstrated that the sensitivities of stock returns to the market liquidity factor in Pastor and Stambaugh (2003) does not explain characteristic liquidity in the spirit of A&M (1986).

Data and Methodology

Liquidity is not a directly observable variable and there are quite a few proxies exists for liquidity. In this paper, two liquidity measures, relative bid-ask spread and turnover rate, are adopted. Trading financial securities requires transactions costs such as bid-ask spreads, brokerage commissions, exchange fees, and transaction taxes. Market makers buy securities at lower price and sell them at higher price, which creates the bid-ask spread. As demonstrated by A&M (1986), assets are selected by rational investors to maximize their expected return net of trading costs, and, as a result, the market-observed expected return is supposed to be an increasing function of the relative bid-ask spread. However, "the data on bid-ask spread is hard to obtain on a monthly basis over long periods of time" (Datar et al., 1998, p. 205). Therefore, another liquidity proxy, the turnover, is employed to complement the use of the spread. As clarified by Datar et al. (1998), this proxy has strong theoretical appeal since it is correlated with equilibrium liquidity. Quite a few studies have shown that expected return of a stock is a decreasing function of turnover rate (e.g., Datar et al. (1998), Jones (2001), and Nguyen and Ghosh (2007)). Also, the data on turnover rates is easier to obtain, which allows the examination of liquidity effects across a large number of stocks over a long period of time (Datar et al., 1998). In this study, relative bid-ask spread is defined at the end of each month as the dollar bid-ask spread divided by the average of the bid and ask prices. For a stock to be included in the analysis, it needs at least eight positive monthly bid-ask spread

available over the prior twelve months. Turnover rate is defined at the end of each month as the trading volume divided by the number of shares outstanding of that firm.

To examine the liquidity effect, the sample in this paper consists of stocks listing on FTSE. Monthly data on stock return index, bid price, ask price, trading volume, number of shares outstanding, market value, market-to-book value, the FTSE All-Share index and UK 3-month T-Bill rates are obtained from DataStream over the period January 1992 to December 2008.

The liquidity effect analysis in this paper involves time-series regressions and cross-sectional regressions. In the time-series regressions, a portfolio approach is adopted. It is normal to test return premium by sorting securities into portfolios according to attributes of the securities. In each month t over the period January 1993 to December 2008, stocks are sorted to form five portfolios based on the average of the relative bid-ask spread over the prior twelve months $BA_{i,t-1\to t-12}$ and the average of the turnover rate over the prior twelve months $TO_{i,t-1\to t-12}$ respectively. The highest-spread (lowest-turnover) portfolio is the least liquid portfolio P_L, and the lowest-spread (highest-turnover) portfolio is the most liquid portfolio P_H. From portfolio P_L to portfolio P_H, there would be portfolio P_2, P_3 and P_4 based on their liquidity rank. Then the portfolio returns over the non-overlapping holding period n (n=1) shall be calculated. The calculation of the portfolio returns follows the approach in Liu and Strong (2008). The monthly portfolio return over a 1-month holding period is

$$R_{P\,t} = \sum_{i=1}^{N} \omega_i R_i \tag{1}$$

Where, $R_{i,t}$ is the return of stock i in month t. It is calculated as the difference between the return index of a stock in month t and month $t-1$ divided by the return index in month $t-1$. Normally, return of a stock includes capital gain and dividend. As the return index has incorporated the dividend reinvestment, it is more convenient to calculate stock return using return index than using price and dividend of the stock. N denotes the number of stock contained in the portfolio in month t and ω_i denotes the weight of stocks. In this paper, it is assumed that portfolios are equally weighted. Hence, the equation (5) becomes:

$$R_{Pt} = \frac{1}{N} \sum_{i=1}^{N} R_{it} \tag{2}$$

The portfolio returns associated with bid-ask spread and turnover rate from 1993 to 2008 will be provided in table A.I and table A.II of the appendix respectively. Following that, adjusted CPAM will be run:

$$R_{Lt} - R_{ft} = \alpha_L + \beta_L MKT_t + \varepsilon_{Lt} \tag{3}$$

$$R_{2,t} - R_{ft} = \alpha_2 + \beta_2 MKT_t + \varepsilon_{2,t} \tag{4}$$

$$R_{3,t} - R_{ft} = \alpha_3 + \beta_3 MKT_t + \varepsilon_{3,t} \tag{5}$$

$$R_{4,t} - R_{ft} = \alpha_4 + \beta_4 MKT_t + \varepsilon_{4,t} \tag{6}$$

$$R_{H,t} - R_{ft} = \alpha_H + \beta_H MKT_t + \varepsilon_{H,t} \tag{7}$$

Where $t = 1, 2, ..., T$ and T is the total number of months from January 1993 to December 2008. The risk free rate R_{ft} is the three month UK T-bill rate in month t divided by 1200. The one month UK T-bill rates are not used as they are not completely available over the period January 1993 to December 2008. The market

factor MKT_t is the excess market return in month t over the risk free rate. Return of FTSE All-Share Index is chosen to be the proxy of market return. The FTSE All-Share is a market-capitalization weighted index representing the performance of all eligible companies listed on the London Stock Exchange's main market and it covers approximately 98% of the UK's market capitalization (FTSE All-Share Index Factsheet). Therefore the FTSE All-Share is considered to be a desirable performance measure of the overall UK equity market. The return difference between the least liquid and the most liquid portfolios, will be regressed against market factor to test if there is liquidity premium:

$$R_{L,t} - R_{H,t} = \alpha_{L-H} + \beta_{L-H} MKT_t + \varepsilon_{L-H,t} \quad (8)$$

α_{L-H} can be regarded as the liquidity premium, after adjusting systematic risk MFT. If MFT captures liquidity, then the hypothesis that $\alpha_{L-H} = 0$ should be rejected. Otherwise, there could be liquidity premium, which can not be explained by systematic risk premium.

As a robustness check, cross-sectional regressions will be performed over the same sample period January 1993 to December 2008. Apart from the two liquidity proxies, two other independent variables, book-to-market ratio and firm size, are to be incorporated as well. Fama and French (1992) showed that the firm size and the ratio of the book value of the firm's equity to the market value of equity are likely to be able to describe the cross-section of average stock returns. They argued that "size and book-to-market equity proxy for risk factors in returns, related to relative earning

prospects, that are rationally priced in expected returns" (1992, p.452). As originally documented by Banz (1981), small-sized stocks seem to earn higher returns. Low book-to-market ratio stocks are likely to provide lower average returns (Fama and French, 1992). What is more, these two factors could have substantial influence on liquidities of stocks. If firm size and book-to-market ratio effectively predicts returns, stocks with small size or high book-to-market ratio would be attractive to investors, which could give rise to higher liquidity. Therefore, it is necessary to explore whether these two famous return predictors capture liquidity premiums. In order to examine whether the liquidity effect persists after controlling for firm size and book-to-market ratio, the expected return of a particular stock will be regressed separately and jointly against the stock's attributes such as turnover, relative bid-ask spread, firm size, book-to-market ratio each month in each year from 1993 to 2008. If firm size and book-to-market ratio capture liquidity, the liquidity proxies should not be significant in explaining the cross-section of asset returns when the two determinants of returns are in the model. If liquidity preference is still significant in the presence of firm size and book-to-market ratio, the argument of liquidity effect holds. In this paper, market value is the measure of firm size. The empirical model is as following:

$$R_{it} = \alpha_{0t} + \sum_{\kappa=1}^{4} \alpha_{\kappa t} x_{it} + \varepsilon_{it} \quad , \quad i = 1, 2, ..., N_{t,} \; t = 1, 2, ..., T \tag{9}$$

Where, R_{it} is the return of stock i in month t as defined in the portfolio analysis. $\mathbf{x}_{it}$ are attributes of stock i such as the average relative bid-ask spread $BA_{i,t-1\to t-12}$, the average turnover rate $TO_{i,t-1\to t-12}$, log of book-to-market value $\left[\ln \frac{B}{M}\right]_{i,t-1}$ and log

of market value $\ln MV_{i,t-1}$. To be specific, $BA_{i,t-1\to t-12}$ and $TO_{i,t-1\to t-12}$ are defined as the same as in the portfolio analysis. $\left[\ln \frac{B}{M}\right]_{i,t-1}$ is the natural logarithm of the book-to-market ratio at end of the month $t-1$ and $\ln MV_{i,t-1}$ is natural logarithm of total market value of firm i at the end of the prior month. Normally the book-to-market ratio is reported in companies' financial annual reports. In U.K. annual reports are made twice a year. Therefore, $\left[\ln \frac{B}{M}\right]_{i,t-1}$ should be the quote observed six months back from month t. N_t denotes the number of stocks in month t which will vary from month to month and T is the total number of months over the sample period. The estimated coefficients of the univariate and multi-variate regressions and associated standard deviations will be summarized in table A.III and table A.IV of the appendix. The monthly estimated coefficients $\hat{\alpha}_{\kappa t}$ ($\kappa = 0,1,...,4; t = 1,2,...T$) will be aggregated across time. In the usual Fama and French (1992) methodology, it is assumed that the portfolios have equal weighting and the average coefficients, α_κ ($\kappa = 0,1,2,3,4$), will be calculated as following:

$$\hat{\alpha}_\kappa = \frac{1}{T}\sum_{t=1}^{T}\hat{\alpha}_{\kappa t} \quad \text{and} \quad \mathrm{Var}(\hat{\alpha}_\kappa) = \frac{\sum_{i=1}^{T}(\hat{\alpha}_{\kappa t} - \hat{\alpha}_\kappa)^2}{T(T-1)} \tag{10}$$

However, as clarified by Datar et al. (1998), the Fama and French (1992) methodology ignores the precision and places equal weight on all slope coefficients, whereas the Litzenberger and Ramaswamy (1979) assumes the weight, $Z_{\kappa t}$, is inversely proportional to the variance of $\hat{\alpha}_{\kappa t}$. As a result, they suggest the Litzenberger and Ramaswamy (1979) methodology is more efficient. Following the

approach in Litzenberger and Ramaswamy (1979), the estimation of each aggregated coefficients, α_κ ($\kappa = 0,1,2,3,4$) is given by

$$\hat{\alpha}_\kappa = \sum_{t=1}^{T} Z_{\kappa t}\hat{\alpha}_{\kappa t} \qquad \text{where} \qquad Z_{\kappa t} = \frac{\left[\mathrm{Var}(\hat{\alpha}_{\kappa t})\right]^{-1}}{\sum_{t=1}^{T}\left[\mathrm{Var}(\hat{\alpha}_{\kappa t})\right]^{-1}} \tag{11}$$

The variance of α_κ is obtained as

$$\mathrm{Var}(\hat{\alpha}_\kappa) = \sum_{t=1}^{T} Z_{\kappa t}{}^{2}\mathrm{Var}(\hat{\alpha}_{\kappa t}) \tag{12}$$

For the sake of comparison, average coefficients will be calculated following the Fama and French (1992) approach and then the Litzenberger and Ramaswamy (1979) method respectively.

In order to test the robustness of the cross-sectional regression results, the complete sample will be divided into two non-overlapping sub-periods of equal length. The first sub-period ranges from January 1993 to December 2000 and the second sub-period ranges from January 2001 to December 2008. For each sub-period, the average slope coefficients along with associated standard deviations will be calculated using the Fama and French (1992) approach and the Litzenberger and Ramaswamy (1979) respectively. Furthermore, to examine whether there is a seasonal behavior of the liquidity premium as suggested in E&R (1993), the results of regressions will be examined when only the months of January are considered for each sub-period.

Table I presents descriptive statistics for the five variables (i.e., relative bid-ask spread,

turnover rate, return of stock, log of book-to-market value and log of market value). The return of stock variable ranges from January 1993 to December 2008 while the other four variables range from January 1992 to December 2007. Each of the five variables is arranged based on its corresponding market value from small to large and sorted into four groups (e.g., Quartile 1% is the group with the smallest market value).

Table I

Descriptive statistics for the relative bid-ask spread, the turnover, the stock returns, the book-to-market ratio and the market value variables.

Panel A Descriptive statistics for the relative bid-ask spread of the whole sample and the four market value-based quartiles (where quartile 1% is the smallest).

$BA_{i,t-1\to t-12}$	Whole	1%	50%	75%	95%
Mean	0.049247	0.289852	0.079781	0.061853	0.051587
Medium	0.028593	0.280193	0.059695	0.040761	0.030949
Maximum	0.678773	0.678773	0.678773	0.678773	0.678773
Minimum	0.000830	0.012909	0.008961	0.002242	0.001188
Std deviation	0.060086	0.167873	0.069945	0.064248	0.060746

Panel B Descriptive statistics for the turnover rate of the whole sample and the four market value-based quartiles (where quartile 1% is the smallest).

$TO_{i,t-1\to t-12}$	Whole	1%	50%	75%	95%
Mean	0.072083	0.020206	0.006155	0.054161	0.069443
Medium	0.044970	0.014026	0.000000	0.035840	0.042625
Maximum	0.711382	0.098176	0.684615	0.711382	0.711382
Minimum	1.92E-05	6.17E-05	-0.941176	1.92E-05	1.92E-05
Std deviation	0.106627	0.022103	0.173689	0.081658	0.104610

Panel C Descriptive statistics for stock return of the whole sample and the four market value-based quartiles (where quartile 1% is the smallest).

R_{it}	Whole	1%	50%	75%	95%
Mean	0.006681	0.031327	0.045828	0.007412	0.006953
Medium	0.000000	0.000000	0.027535	0.000000	0.000000
Maximum	4.984615	2.901493	1.711382	4.984615	4.984615
Minimum	-0.944557	-0.688889	1.92E-05	-0.941176	-0.944557
Std deviation	0.149900	0.353298	0.079821	0.160346	0.152282

Panel D Descriptive statistics for natural log of book-to-market ratio of the whole sample and the four market value-based quartiles (where quartile 1% is the smallest).

$\left[\ln\frac{B}{M}\right]_{i,t-1}$	whole	1%	50%	75%	95%
Mean	-0.563334	-0.182540	-0.501415	-0.581251	-0.634965
Medium	-0.536493	-0.246860	-0.364643	-0.463734	-0.536493
Maximum	4.605170	4.605170	4.605170	4.605170	4.605170
Minimum	-7.169296	-7.44257	-7.83763	-7.83763	-7.83763
Std deviation	1.020997	1.516601	1.101682	1.016916	1.019208

[Cont.]

Table I

(continued)

Panel E Descriptive statistics for natural log of market value of the whole sample and the four market value-based quartiles (where quartile 1% is the smallest).

$\ln MV_{i,t-1}$	whole	1%	50%	75%	95%
Mean	4.252757	-0.326092	2.939824	3.735231	4.135071
Medium	4.059753	-0.301105	3.075005	3.836545	4.468548
Maximum	11.75610	0.314811	4.604570	6.068101	8.538362
Minimum	-2.407946	-2.407946	-2.407946	-2.407946	-2.407946
Std deviation	2.065040	0.464137	1.117371	1.468135	1.905491

Panel A provides descriptive statistics for the relative bid-ask spread of the whole sample and the four market value-based quartiles, and panel B summarizes descriptive statistics for the turnover rate respectively. Observing the results of panel A, the relative bid-ask spread decreases as firm size increases. For firms in the smallest quartile the spread is 0.289852, whereas for firms in the largest quartile it is only 0.051587. It is shown in panel B that the turnover rate ranges from 1.92E-05 to 0.711382 and has a mean of 0.072083. Comparing panel A and B, the relative bid-ask spread of smaller firms are more volatile than those of larger firms, whereas the turnover ratio of larger firms are more volatile than those of smaller firms. Panel C, D and E report the other three variables of sample stocks (i.e., stock return, natural logarithm of book-to-market ratio and natural logarithm of market value). Panel C shows that on average the stock returns of larger firms are lower and less volatile than those of smaller firms. The natural log of book-to-market ratio varies from -7.169296 to 4.605170 and has a mean of -0.563334. Also, it decreases as firm size increases (see panel D). As for the log of market value, it ranges from -2.407946 to 11.75610 and has a mean of 4.252757.

Table II provides correlations among the relative bid-ask spread, turnover rate, natural log of book-to-market ratio and natural log of market value in the complete sample. The correlation between the relative bid-ask spread and the turnover rate is -0.216032, indicating that stocks with larger transaction cost would be traded less frequently and vice versa. The relative bid-ask spread is negatively correlated with firm size at -0.651891, which is in line with the finding of Stoll and Whaley (1983) and with the characteristics of the descriptive statistics for the bid-ask spread in table I panel A. The correlation between turnover rate and book-to-market ratio is negative at -0.124704, suggesting that the low book-to-market stock is accompanied by large trading volume. The turnover rate is positively correlated with firm size at 0.311973, indicating that trading quantity increases proportionately with firm size. As explained in Fama and French (1992), firms with high market value are more likely to be firms with stronger prospects, higher stock prices and lower book-to-market ratio, which could lead to higher trading volume.

Table II

Correlation among relative bid-ask spread, turnover rate, natural log of book-to-market ratio and natural log of market value.

	$BA_{i,t-1\to t-12}$	$\left[\ln \frac{B}{M}\right]_{i,t-1}$	$TO_{i,t-1\to t-12}$	$\ln MV_{i,t-1}$
$BA_{i,t-1\to t-12}$	1.000000	0.141691	-0.216032	-0.650891
$\left[\ln \frac{B}{M}\right]_{i,t-1}$	0.141691	1.000000	-0.124704	-0.209676
$TO_{i,t-1\to t-12}$	-0.216032	-0.124704	1.000000	0.310973
$\ln MV_{i,t-1}$	-0.650891	-0.209676	0.310973	1.000000

Liquidity Premium

This section explores the liquidity premium by examing the data of U.K. equity market over the period 1993 to 2008. Time-series regressions involving a portfolio approach will be performed. As a robustness check, cross-sectional regressions will also be conducted in the complete sample, each sub-period and only the months of January respectively.

A. Time-series Regressions

In the time-series regression, five portfolios are formed according to the relative bid-ask spread measure and the turnover rate measure relatively. First of all, the average monthly rates of stock returns of each of the five portfolios are examined. The average monthly rates of return, R_P^{avr}, is calculated as

$$R_P^{avr} = \frac{1}{T}\sum_{t=1}^{T} R_{Pt} \quad (P = L, 2, 3, 4, H) \tag{13}$$

Where, R_{Pt} is the portfolio return in month t as defined by equation (2) and T is the total number of months in the sample period. Figure I reports the results associated with portfolios sorted by spread measure and figure II shows the results associated with portfolios sorted by turnover rate measure.

Figure I. Average monthly return associated with the relative bid-ask spread. From left to right is the least liquid portfolio to the most liquid portfolio. The left axis stands for average monthly return.

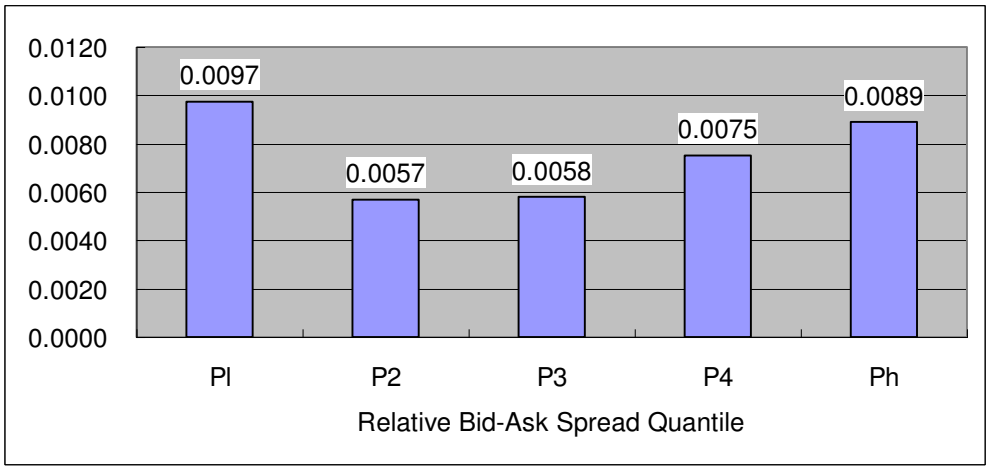

Figure II. Average monthly return associated with the turnover rate. From left to right is the least liquid portfolio to the most liquid portfolio. The left axis stands for average monthly return.

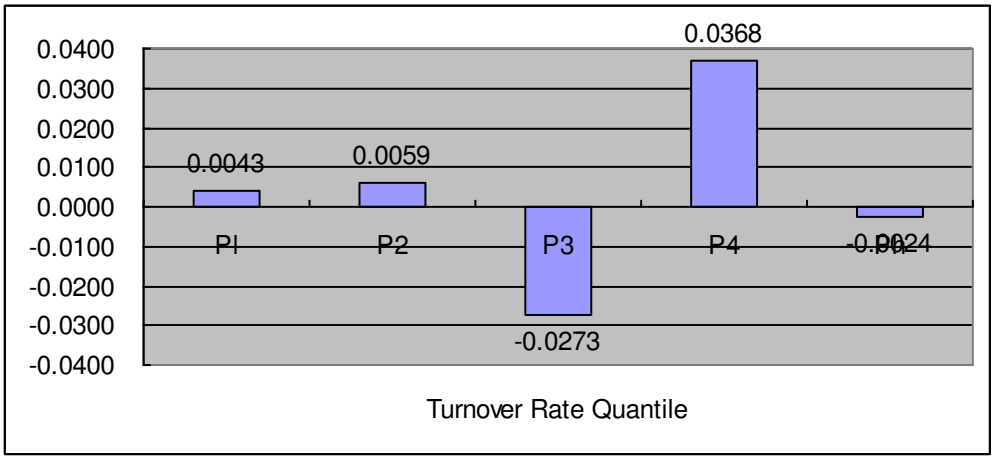

Figure I and figure II show that although the average monthly stock returns do not change steadily from the least liquid portfolio to the most liquid portfolio, in both figures the least liquid portfolios earn higher average monthly return than the most liquid portfolios.

Secondly, table III provides performance and characteristics of equally-weighted portfolios sorted by $BA_{i,t-1\to t-12}$. The notation α stands for the estimated intercept of the adjusted CAPM and the notation β stands for the estimated coefficient of the

market factor, MKT_t. Overall, the results do not reveal any convincing evidence of liquidity premium. For the one-month holding period, the intercept of the adjusted CAPM for the return difference between the least liquid and the most liquid portfolios is not statistically significant. Shown in the table III, the $\mathrm{L}-\mathrm{H}$ premium, $\hat{\alpha}_{\mathrm{L-H}}$, is 0.000799 ($\mathrm{t}$ =0.176721) per month. What is more, out of the five portfolios (i.e., $\mathrm{P_L}$, $\mathrm{P_2}$, $\mathrm{P_3}$, $\mathrm{P_4}$ and $\mathrm{P_H}$), only the intercepts in regressions for the most liquid and the secondary liquid portfolios are significant at 0.005559 (t =3.699083) per month and at 0.004090 (t =2.084058) per month. By contrast, for each adjusted CAPM, the estimated slope coefficients of the market factor, $\hat{\beta}_{\mathrm{P}}$ ($\mathrm{P}=\mathrm{L},2,3,4,\mathrm{H}$), are statistically significant. Nevertheless, the $\hat{\beta}_{\mathrm{L-H}}$ for the return difference between $\mathrm{P_L}$ and $\mathrm{P_H}$ fails to be significantly distinguished from zero, which suggests that the market beta is also incapable to explain the return difference. The characteristics of the portfolios classified by $\mathrm{BA}_{\mathrm{i},t-1\to t-12}$ indicates that the turnover rate increase steadily from the high-spread portfolio to the low-spread portfolio, showing that the least liquid stocks are thinly traded while the most liquid stocks are more heavily traded. Furthermore, high-liquidity stocks are glamour stocks and low-liquidity stocks tend to be value stock as $\left[\ln\frac{\mathrm{B}}{\mathrm{M}}\right]$ increases from the high- to low-liquidity portfolios. The table also shows that the least liquid portfolio contains small stocks and the most liquid portfolio contains large stocks, which is consistent with Pastor and Stamburgh (2001).

Table III

Performance and characteristics of equally-weighted portfolios sorted by $BA_{i,t-1\to t-12}$

Stocks are equally grouped into five equally weighted portfolios based on relative bid-ask spread and held for one month. The least liquid portfolio is P_L, the most liquid portfolio is the P_H, and $L-H$ is the return difference between P_L and P_H. The notation α stands for the estimated intercept of the adjusted CAPM and the notation β stands for the estimated slope coefficient of the market factor, MKT_t. Numbers in the first parentheses are t-statistics and numbers in the second parentheses are p-values.

	P_L	P_2	P_3	P_4	P_H	$L-H$
Portfolio Performance						
α	0.006357 (1.302475) (0.1943)	0.002196 (0.74062) (0.4598)	0.002422 (0.914152) (0.3618)	0.004090 (2.084058) (0.0385)	0.005559 (3.699083) (0.0003)	0.000799 (0.176721) (0.8599)
β	0.9525 43 (7.712460) (0.0000)	0.850154 (11.33024) (0.0000)	0.926587 (13.82412) (0.0000)	0.918239 (18.49061) (0.0000)	0.966883 (25.42866) (0.0000)	-0.014340 (-0.125369) (0.9004)
Portfolio Carateristics						
$BA_{i,t-1\to t-12}$	0.070513	0.021971	0.056907	0.033279	0.010651	0.059863
$TO_{i,t-1\to t-12}$	0.052925	0.06639	0.068354	0.071023	0.097853	-0.04493
$\left[\ln\frac{B}{M}\right]_{i,t-1}$	-0.3037	-0.50447	-0.35069	-0.52873	-0.78588	0.482178
$\ln MV_{i,t-1}$	3.428152	5.848584	4.297345	4.59362	6.767205	-3.33905

Table IV presents performance and characteristics of portfolios sorted by $TO_{i,t-1\to t-12}$. There is also no substantial evidence of the liquidity premium as in the previous case. The $L-H$ premium, $\hat{\alpha}_{L-H}$, is insignificant while the $\hat{\beta}_{L-H}$ has explanatory power in the return difference between the least liquid portfolio and the most liquid portfolio. The estimated $\hat{\alpha}_P$ ($P = L, 2, 3, 4, H$) are insignificant except for one case of $\hat{\alpha}_4$. Notably, the slope coefficients of market factor, $\hat{\beta}_P$ ($P = L, 2, 3, 4, H$), decreases from the most liquid portfolio P_H to the least liquid portfolio P_L, which is similar to the finding of Liu (2006). As the Table IV shows, the least liquid portfolio has a beta of 0.792454, while the highest beta remains with the most liquid portfolio. It seems that the least

liquid stocks, which are likely to be small, appear to be less risky than the most liquid stocks, which tend to be larger stocks. This could suggest that the beta of market factor does not completely measure the risk to which a security is exposed. Consistent with the characteristics of portfolios in table III, the relative bid-ask spreads decrease from the low-TO portfolio to the high-TO portfolio. The $\ln MV_{i,t-1}$ and $\left[\ln \frac{B}{M}\right]_{i,t-1}$ of the five portfolios changes gradually from the lowest turnover rate portfolio to the highest turnover rate portfolio, suggesting that the least liquid stocks are small-sized and are value stocks, while the most liquid stocks are large-sized and glamour stocks. This is similar to the results of Lee and Swaminathan (2000). Although neither of the two liquidity measures predicts returns significantly, the relative bid-ask spread might be slightly better than the turnover rate. The influence of the spread on the return difference between the highest spread and the lowest spread portfolio is 0.000799 (t=0.176721) per month. By contrast, the turnover rate measure predicts a return difference of 0.000592 (t=0.011248) per month, which is 0.0207 percent lower than the spread.

Table IV

Performance and characteristics of equally-weighted portfolios sorted by $TO_{i,t-1\to t-12}$

Stocks are equally grouped into five equally weighted portfolios based on $TO_{i,t-1\to t-12}$ and held for one month. The least liquid portfolio is P_L, the most liquid portfolio is P_H, and $L-H$ is the return difference between P_L and P_H. The notation α stands for the estimated intercept of the adjusted CAPM and the notation β stands for the estimated slope coefficient of the market factor, MKT_t. Numbers in the first parentheses are t-statistics and numbers in the second parentheses are p-values.

	P_L	P_2	P_3	P_4	P_H	$L-H$
Portfolio Performance						
α	0.000768 (0.198885) (0.8426)	0.002269 (0.915948) (0.3609)	-0.028980 (-0.866273) (0.3874)	0.033777 (2.225955) (0.0272)	0.000176 (0.003323) (0.9974)	0.000592 (0.011248) (0.9910)
β	0.792454 (8.112993) (0.0000)	0.701287 (11.18549) (0.0000)	2.554838 (3.018118) (0.0029)	1.330893 (3.466275) (0.0007)	6.719414 (5.026084) (0.0000)	-5.926960 (-4.449281) (0.0000)
Portfolio Characteristics						
$BA_{i,t-1\to t-12}$	0.069492	0.04135	0.031353	0.028921	0.027048	0.042444
$TO_{i,t-1\to t-12}$	0.008877	0.029306	0.044461	0.068368	0.198527	-0.18965
$\left[\ln\frac{B}{M}\right]_{i,t-1}$	-0.3458	-0.36976	-0.42119	-0.58261	-0.73155	0.385753
$\ln MV_{i,t-1}$	3.664947	4.676098	5.073478	5.631091	5.483925	-1.81898

B. Cross-sectional Regressions

In this part, regressions will be performed to examine the influence of liquidity as measured by the relative bid-ask spread and turnover rate on the cross-sectional stock returns with or without controlling for book-to-market ratio and firm size. Starting from January 1993 to December 2008, in each month, univariate cross-sectional regression of stock returns will be run on the two liquidity proxies, book-to-market ratio and firm size respectively and then multi-variate regressions with combination of explanatory variables will be run as well. In every regression, for each of the explanatory variables, there are 192 monthly estimates of the slope

coefficients along with associated standard deviations. Average slope coefficients and intercepts are obtained following Fama and French (1992) approach, which are summarized in table V. For the sake of comparison, the average slope coefficients and intercepts are also calculated using Litzenberger and Ramaswamy (1979) method, which are provided in table VI.

Table V

Cross-sectional regression: Fama and French (1992) estimates

Average coefficients of monthly cross-sectional regressions of returns on relative bid-ask spread, turnover rate, log of book-to-market ratio and log of market value from January 1993 to December 2008. Returns are regressed each month on the independent variables individually and jointly. The estimated average coefficients and associated t-statistics (in parentheses) are calculated following Fama and French (1992) approach.

Constant	$BA_{t,t-1\to t-12}$	$TO_{i,t-1\to t-12}$	$\left[\ln\frac{B}{M}\right]_{i,t-1}$	$\ln MV_{i,t-1}$
0.005753 （1.666673）	0.006483 （0.234753）			
0.003101 （0.004552）		0.043309 （4.074279）		
0.008616 （2.443651）			0.002732 （0.009208）	
0.006202 （1.186144）				-0.000173 (-0.26117)
0.005581 （1.00135）	0.009028 （0.286466）		0.003093 （2.150672）	0.00056 (0.75977)
0.007502 （1.395112）		0.048571 (4.48029)	0.00332 （2.257576）	-0.0002 (-0.27477)
0.004334 （0.779867）	0.014326 （0.454575）	0.046614 (4.38491)	0.003832 (2.570225)	0.000189 (0.252143)

The results in table V shows that the relative bid-ask spread is positively related to expected stock returns. Nonetheless, the impact of the spread on returns can not be reliably distinguished from zero. For example, the univariate regression yields a coefficient of 0.006483（t=0.234753）on spread. In the presence of turnover,

book-to-market and market size variables, the t-statistic of spread is 0.454575. This finding is not consistent with the results of A&M (1986). Counterintuitively, it is shown that the turnover rate is significantly positively related to stock returns. The relation remains significant even after controlling for the book-to-market ratio and market value. The positive sign on the turnover rate variables suggests that liquid stocks offer higher average returns than illiquid stocks, which is in consistent with Datar et al. (1998). Therefore, no matter using bid-ask spread measure or turnover measure, one can not detect a significant liquidity effect. Additionally, the book-to-market value effect is significant with the one exception in the univariate regression. In the three multi-variate regressions, the slope coefficients on log of book-to-market are positively significant, confirming that the higher the book-to-market value is, the higher the stock returns will be. In contrast, table V shows that there is no size effect as none of the slope coefficients of log of market value is significantly different from zero.

Table VI

Cross-sectional regression: Litzenberger and Ramaswamy (1979) estimates

Average coefficients of monthly cross-sectional regressions of returns on relative bid-ask spread, turnover rate, log of book-to-market ratio and log of market value from January 1993 to December 2008. Returns are regressed each month on the independent variables individually and jointly. The estimated average coefficients and associated t -statistics (in parentheses) are calculated using Litzenberger and Ramaswamy (1979) method.

Constant	$BA_{i,t-1\to t-12}$	$TO_{i,t-1\to t-12}$	$\left[\ln\frac{B}{M}\right]_{i,t-1}$	$\ln MV_{i,t-1}$
0.00405904 （4.689298）	-0.05027 （-4.42859）			
-0.000921397 （-1.13275）		0.029038 （4.646423）		
0.004439549 （5.503329）			0.003046 （4.483812）	
-0.006630663 （-4.19163）				0.001552 (5.03015)
-0.00165 （-0.62685）	-0.02061 （-1.37439）		0.00383 （5.496098）	0.001645 (3.882249)
-0.0054 （-3.31492）		0.023795 (3.611697)	0.004029 （5.781947）	0.001679 (4.971434)
-7.107E-05 （-0.95133）	-0.0170932 （-1.12309）	-0.0030096 (-0.58216)	0.00427723 (6.128096)	0.00129739 (2. 918495)

The results shown in table VI are different from those in table V in some degree. The evidence reveals a negative relation between the relative bid-ask spreads and stock returns. Two coefficients in the two multi-variate regressions are insignificant, whereas the one in the univariate regression is highly significant. This is inconsistent with the results in table V and the findings of A&M (1986). The outcomes associated with the turnover rate measure are similar to those in table V with the one exception that turnover is insignificantly negatively related to stock returns in the presence of spread, book-to-market and firm size variables. Like the results in table V, the book-to-market value effect is still reliably positive. On the contrary, table VI suggests that opposite size effect is observed since all the slope coefficients on log of

market value are significantly positive.

As robustness test, the whole sample period is divided into two equal lengthy sub-periods. The first sub-period spans from January 1993 to December 2000 and the second sub-period spans from January 2001 to December 2008. The results for both sub-periods, obtained in the Fama and French (1992) approach and the Litzenberger and Ramaswamy (1979) approach respectively, are presented in Table VII and VIII. In both tables, the panel A shows the results of regression for the first sub-period and the panel B shows the results for the second sub-period.

Table VII

Sub-period cross-sectional regression: Fama and French (1992) estimates

Returns are regressed on the explanatory variables each month from January 1993 to December 2008. The estimates of average slopes and associated t-statistics (in parentheses) are calculated using the Fama and French (1992) approach. Panel A corresponds to the results from January 1993 to December 2000 and panel B corresponds to January 2001 to December 2008.

Constant	$BA_{i,t-1\to t-12}$	$TO_{i,t-1\to t-12}$	$\left[\ln\frac{B}{M}\right]_{i,t-1}$	$\ln MV_{i,t-1}$
Panle A results over the sample period January 1993 to December 2000				
0.01211 (3.131514)	0.004725 (0.124219)			
0.007618 (1.780049)		0.058636 (4.397989)		
0.013579 (3.220501)			0.001964 (0.895431)	
0.012795 (1.702783)				-0.0005 (-0.47679)
0.015567 (1.795015)	-0.00643 (-0.16204)		0.002735 (1.543826)	-0.00032 (-0.26538)
0.014316 (1.815693)		0.065312 (4.861847)	0.003245 (1.853149)	-0.00062 (-0.55631)
0.013254 (1.532965)	0.003412 (0.085997)	0.065841 (4.901478)	0.003307 (1.732658)	-0.00063 (-0.50899)

Table VII
(continued)

Panel B results over sample period January 2001 to December 2008				
-0.05805 (-5.90173)	0.008241 (0.20477)			
-0.13591 (-9.11052)		0.027983 (1.697761)		
0.003653 (0.64885)			0.0035 (1.592827)	
-0.00039 (-0.05396)				0.000153 (0.188087)
-0.00441 (-0.63857)	0.024487 (0.498444)		0.003451 (1.516914)	0.001421 (1.652907)
0.000688 (0.094449)		0.031831 (1.881444)	0.003395 (1.43091)	0.000217 (0.22521)
-0.00459 (-0.66361)	0.025241 (0.513352)	0.027386 (1.6786)	0.004357 (1.894457)	0.001007 (1.185509)

Table VIII

Sub-period cross-sectional regressions: Litzenberger and Ramaswamy (1979) estimates

Returns are regressed on the explanatory variables each month from January 1993 to December 2008. The estimates of average slopes and associated t-statistics (in parentheses) are calculated using the Litzenberger and Ramaswamy (1979) approach. Panel A corresponds to the results from January 1993 to December 2000 and panel B corresponds to January 2001 to December 2008.

Constant	$BA_{i,t-1\to t-12}$	$TO_{i,t-1\to t-12}$	$\left[\ln \frac{B}{M}\right]_{i,t-1}$	$\ln MV_{i,t-1}$
Panel A results over the sample period January 1993 to December 2000				
0.007019 (5.902221)	-0.054299 (-2.83704)			
0.000955 (0.864828)		0.034330 (3.771251)		
0.006606 (6.042631)			0.001363 (1.580209)	
-0.0046 (-1.9687)				0.001533 (3.373898)

Table VIII
(continued)

0.002758 (0.672761)	-0.023403 (-0.89528)		0.002194 (2.482843)	0.001316 (2.047553)
-0.00364 (-1.48265)		0.033296 (3.589796)	0.002386 (2.716178)	0.001559 (3.274321)
-0.00027 (-0.06637)	-0.014492 (-0.55381)	-0.010376 (-1.66803)	0.002606 (2.975042)	0.001040 (1.587122)
Panel B results over sample period January 2001 to December 2008				
0.000724 (0.573638)	-0.048079 (-3.41058)			
-0.00315 (-2.61702)		0.024321 (2.829498)		
0.00185 (1.547422)			0.005792 (5.255614)	
-0.00836 (-3.88565)				0.001568 (3.731267)
-0.004199 (-1.22409)	-0.019240 (-1.05092)		0.006524 (5.755055)	0.001897 (3.36778)
-0.00679 (-3.11598)		0.014120 (1.508516)	0.006813 (5.95602)	0.001800 (3.757831)
-0.00407 (-1.18288)	-0.018423 (-0.98466)	0.013438 (1.445706)	0.007182 (6.218273)	0.001517 （2.507094）

Consistent with previous outcome, the results in table VII and table VIII show that there is no evidence of liquidity effect in either sub-period. With the Fama and French (1992) method, the bid-ask spread is insignificantly positively related to return with one exception in the multi-variate regression in the first sub-period. With the Litzenberger and Ramaswamy (1979) approach, the relation between spread and return remains negative. With either method, the turnover has positive impact on

returns with only one exception. In table VIII, the log of market value is negatively related to stock returns although the relation is not significant and limited to the first sub-period. In both tables, the book-to-market value effect is persistent in both sub-periods except in the univariate regression in table VII.

Apart from that, to test whether there is a seasonal component as reported in E&R (1993), the average coefficients are calculated only for the months of January in both sub-periods. Table IX provides the results associated with the Fama and French (1992) approach and table X provides the results associated with the Litzenberger and Ramaswamy (1979) approach. In both tables, the panel A corresponds to the first sub-period and the panel B corresponds to the second sub-period.

Table IX

Cross-sectional regressions for months of January: Fama and French (1992) estimates

Returns are regressed on the explanatory variables in each January from 1993 to 2008. The estimates of average slopes and associated t-statistics (in parentheses) are calculated using the Fama and French (1992) approach. Panel A corresponds to the results from 1993 to 2000 and panel B corresponds to 2001 to 2008.

Constant	$BA_{i,t-1\to t-12}$	$TO_{i,t-1\to t-12}$	$\left[\ln \frac{B}{M}\right]_{i,t-1}$	$\ln MV_{i,t-1}$
Panel A results over sample period January 1993 to December 2000				
0.028267 （1.92193）	0.180767 （0.972738）			
0.033778 （1.89768）		0.138606 （2.011896）		
0.033989 （2.117218）			0.013382 （1.430712）	
0.051649 （1.506944）				-0.00846 （-1.48877）

Table IX
(continued)

0.092957 （-0.11952）	-0.06335 （-0.52486）		0.00577 （-0.14359）	-0.00794 （0.89895）
0.086818 （2.189497）		0.152618 （2.540838）	0.006377 （0.861992）	-0.008 （-1.53097）
0.076179 （2.075114）	-0.06154 （-0.57718）	0.146585 （2.478367）	0.00647 （0.257843）	-0.01003 （-1.26628）
Panel B　results over sample period January 2001 to December 2008				
0.03612 （1.312256）	0.082345 （0.478168）			
0.073645 （2.409267）		0.010656 （0.276018）		
0.018445 （1.028231）			0.009958 （1.366973）	
0.031409 （1.160109）				-0.0051 （-1.77482）
0.039763 （2.178975）	-0.03038 （-0.14359）		0.004425 （0.502471）	-0.0038 （-1.15117）
0.035831 （1.240416）		0.041625 （1.042957）	0.007825 （0.84303）	-0.00493 （-1.30589）
0.038689 （2.147044）	-0.02581 （-0.12218）	0.038518 （0.976318）	0.005845 （0.544525）	-0.00528 （-2.08427）

Table X

Cross-sectional regressions for months of January: Litzenberger and Ramaswamy (1979) estimates

Returns are regressed on the explanatory variables in each January from 1993 to 2008. The estimates of average slopes and associated t-statistics (in parentheses) are calculated using the Litzenberger and Ramaswamy (1979) approach. Panel A corresponds to the results from 1993 to 2000 and panel B corresponds to 2001 to 2008.

Constant	$BA_{i,t-1\to t-12}$	$TO_{i,t-1\to t-12}$	$\left[\ln\frac{B}{M}\right]_{i,t-1}$	$\ln MV_{i,t-1}$
Panel A results over sample period January 1993 to December 2000				
0.012321 （2.841891）	0.010448 （0.137189）			
0.009063 （2.203404）		0.094266 （2.544202）		
0.024078 （5.629424）			0.005461 （1.608161）	
0.005563 （0.815089）				-0.00467 （-2.75118）
0.054665 （3.775424）	-0.14682 （-1.46679）		0.002385 （0.68729）	-0.00473 （-1.99985）
0.042103 （4.501399）		0.105746 （2.831791）	0.002842 （0.826913）	-0.00487 （-2.70453）
0.03011 （2.174047）	-0.12942 （-1.29777）	0.103605 （2.763593）	0.002838 （0.823033）	-0.00556 （-2.34856）
Panel B results over sample period January 2001 to December 2008				
-0.00022 （-0.04662）	0.034065 （0.623006）			
0.005523 （1.242571）		-0.01303 （-0.43094）		
0.013469 （3.006223）			0.014048 （3.550313）	
0.018174 （2.240809）				-0.00354 （-2.24452）

Table X
(continued)

0.037055 （2.941979）	-0.06588 （-0.93311）		0.009154 （2.388157）	-0.00444 （-2.08423）
0.023243 （2.823222）		0.015812 （0.486967）	0.013458 （3.263727）	-0.00366 （-2.01061）
0.036959 （2.918616）	-0.06293 （-0.88982）	0.015405 （0.479482）	0.007689 （3.367659）	-0.00481 （-2.15287）

Both table IX and table X indicate no sign of liquidity effect in the months of January. Remarkably, with the Litzenberger and Ramaswamy (1979) approach, the market value variable exhibits a reliable negative relation with returns in both sub-periods. This relation persists even after controlling for other explanatory variables. In contrast, the value effect is restricted to the second sub-period.

In summary, the time-series analysis shows that the most liquid stocks are more heavily traded than the least liquid stocks. High-liquidity stocks are glamour stocks and large-sized, whereas low-liquidity stocks tend to be value stock and small-sized. However, for one-month holding period there is no significant evidence of liquidity premium associated with either liquidity measure, the relative bid-ask spread or the turnover rate. The intercept of the adjusted CAPM on the return difference between the least liquid and most liquid portfolio can not be distinguished from zero in either scenarios. Consistent with the time-series analysis, the results of cross-sectional regression also suggest that liquidity does not explain the variation in cross-sectional asset returns and, if anything, the opposite is observed. During the whole sample

period, the relative bid-ask spread on stock returns does not have significantly positive impact on stock returns, whereas the turnover rate is positively related to returns with or without controlling for the book-to-market ratio and market value. The results in the sub-period test are similar to the complete sample. When only the months of January are included, the spread has no effect on returns. Yet the positive relation between turnover rate and stock returns is limited to the first sub-period. Additionally, it is shown that, among the four explanatory variables in the cross-sectional regression, the book-to-market ratio is the most efficient return predictor, whereas the influence of firm size on returns is only significant in January months over the second half of sample period.

A potential reason for the failure of detecting a liquidity effect could be the poor proxies for liquidity. Peterson and Fialkowski (1994) point out that the quoted spread is a poor proxy for the actual transactions costs faced by investors. B&S (1996) argued that quoted bid-ask spread is a noisy measure of illiquidity because many large trades occur outside the spread and many small trades occur within the spread. Acharya and Pedersen also point out that “the bid-ask spread measures well the cost of selling a small number of shares, but it does not necessarily measure well the cost of selling many shares” (2005, p.385). In empirical test, E&R (1993) failed to find a positive relation between spreads and returns for the non-January months. Thus, it could be possible that relative bid-ask spread is not qualified to be a liquidity measure. As for the turnover rate, it could also be the case that turnover is unlikely to be liquidity

proxy. Lee and Swaminathan (2000) show that although high (low) volume firms earn lower (higher) future returns, the opposite is true in the past. This is similar to the findings in this paper in that the relation between turnover and returns is positive rather than negative. Moreover, it could be that the turnover can not predict return significantly. With security data of U.S. market, Liu (2007) concluded that turnover has no predictive power. When examining emerging market, Rouwenhorst (1999) find no evidence of relation between expected return and turnover. Similar to Rouwenhorst (1999), Bekaert et al. (2007) point out that turnover does not predict return in emerging market as well. Therefore, the reason why there is no evidence of liquidity premium could be either liquidity has no impact on returns or spread and turnover are poor liquidity proxies. For either case, further research is deserved.

Conclusion

Liquidity premium has become a growing interest of academic researchers. However the outcomes of investigations are mixed. While limited studies have focused on the U.K security market, this paper makes an effort to fill in this gap. With monthly data from 1993 to 2008 of U.K. equity market, this paper provides an analysis of the liquidity effect using the relative bid-ask spread and the turnover rate as liquidity proxies. The main finding is that there is no liquidity effect. To be specific, first of all, in the time-series analysis stocks are sorted into five portfolios based on bid-ask spread and turnover rate respectively. The characteristics of portfolios show that high-liquidity stocks are heavily traded, glamour stocks with large size, whereas low-liquidity stocks tend to be thinly traded, value stock and small-sized. In the empirical tests, results suggest that for one-month holding period there is no significant evidence of liquidity premium associated with either liquidity measure. The intercept of the adjusted CAPM on the return difference between the least liquid and most liquid portfolio can not be distinguished from zero in either scenarios. Secondly, consistent with the time-series analysis, the results of cross-sectional regression also suggest that liquidity does not explain the cross-sectional variation in asset returns and, if anything, the opposite is observed. Over the whole sample period, the relation between bid-ask spread and return is not significantly positive, whereas the turnover rate is positively related to returns with or without controlling for the book-to-market ratio and market value. To test the robustness of the results, the

whole sample period is divided into two non-overlapping sub-periods. The results in the sub-period test are similar to those with the complete sample. To test whether there is seasonal component or not, only the months of January are considered. In this case, the relative bid-ask spread still has no predictive power and the turnover rate remains positively related to returns. But the positive relation between turnover and return is restricted to the first sub-period. In addition, the book-to-market ratio turns out to be powerful in predicting expected returns, whereas the influence of firm size on returns is only significant in January months over the sample second sub-period from 2001 to 2008.

The limitation of this analysis is that due to time constrain, just one-month holding period return is investigated in the time-series regression. Further study could be carried out on examining holding period more than one month. What is more, finer and more sophisticated measure of liquidity could be developed to explore the liquidity effect. Although this paper does not produce evidence supporting liquidity effect, it contributes to liquidity studies by providing investigation of U.K. equity market. Accordingly, the liquidity effect in U.K. market deserves further research and comparisons with similar study using U.S. market data are needed.

Appendix

Table A.I

Portfolio returns sorted by the relative bid-ask spread for one holding period from January 1993 to December 2008

	P_H	P_4	P_3	P_2	P_L
1993-1-29	0.0191	0.0774	0.0738	0.1084	0.1377
1993-2-26	0.0197	0.0347	0.0552	0.0623	0.0835
1993-3-31	0.0262	0.0284	0.0507	0.0381	0.0729
1993-4-30	-0.0018	0.0356	0.0519	0.0481	0.0634
1993-5-31	0.0057	0.0216	0.0399	0.1040	0.0660
1993-6-30	0.0163	0.0230	0.0234	0.0459	0.0290
1993-7-30	0.0289	0.0256	-0.0071	-0.0001	0.0055
1993-8-31	0.0572	0.0793	0.0828	0.0928	0.0863
1993-9-30	-0.0016	-0.0150	0.0131	0.0063	-0.0256
1993-10-29	0.0235	0.0321	0.0297	0.0213	0.0403
1993-11-30	-0.0065	-0.0222	-0.0267	-0.0167	-0.0430
1993-12-31	0.0621	0.0728	0.0609	0.0398	0.0828
1994-1-31	0.0662	0.0912	0.1522	0.1476	0.1932
1994-2-28	-0.0352	0.0149	0.0219	0.0140	0.0168
1994-3-31	-0.0590	-0.0481	-0.0837	-0.0592	-0.0322
1994-4-29	0.0027	0.0239	0.0269	0.0202	0.0059
1994-5-31	-0.0425	-0.0266	-0.0307	-0.0185	-0.0292
1994-6-30	-0.0349	-0.0407	-0.0620	-0.0433	-0.0708
1994-7-29	0.0632	0.0374	0.0106	0.0283	0.0096
1994-8-31	0.0564	0.0325	0.0170	0.0268	0.0298
1994-9-30	-0.0696	-0.0438	-0.0515	-0.0289	-0.0354
1994-10-31	-0.0007	-0.0139	-0.0073	-0.0415	-0.0581
1994-11-30	0.0048	0.0010	-0.0077	-0.0122	-0.0024
1994-12-30	0.0001	-0.0112	0.0082	-0.0119	0.0135
1995-1-31	-0.0333	-0.0045	-0.0268	-0.0061	-0.0114
1995-2-28	0.0003	-0.0118	-0.0156	-0.0367	-0.0816
1995-3-31	0.0343	0.0227	-0.0007	0.0128	-0.0433
1995-4-28	0.0398	0.0291	0.0154	0.0056	0.0692
1995-5-31	0.0406	0.0543	0.0606	0.0506	0.0831
1995-6-30	-0.0081	-0.0188	-0.0005	0.0290	-0.0092
1995-7-31	0.0651	0.0576	0.0465	0.0306	0.0132
1995-8-31	0.0225	0.0159	0.0358	0.0468	0.0294
1995-9-29	0.0284	-0.0164	0.0329	0.0059	-0.0020

1995-10-31	-0.0158	-0.0261	-0.0015	-0.0079	-0.0079
1995-11-30	0.0224	0.0161	0.0224	0.0011	0.0470
1995-12-29	0.0158	0.0226	0.0097	0.0228	0.0119
1996-1-31	0.0280	0.0278	0.0376	0.0192	0.0110
1996-2-29	0.0216	0.0140	0.0158	0.0043	0.0168
1996-3-29	0.0204	0.0111	0.0170	0.0501	0.0346
1996-4-30	0.0551	0.0779	0.0411	0.1037	0.0171
1996-5-31	0.0032	0.0087	0.0560	0.0285	0.0636
1996-6-28	-0.0123	-0.0082	-0.0180	-0.0156	-0.0189
1996-7-31	-0.0150	-0.0395	-0.0399	-0.0214	-0.0345
1996-8-30	0.0411	0.0349	0.0381	0.0300	0.0280
1996-9-30	0.0120	0.0080	0.0166	-0.0068	0.0015
1996-10-31	0.0103	0.0156	-0.0019	0.0074	-0.0250
1996-11-29	0.0114	0.0049	-0.0111	0.0105	-0.0279
1996-12-31	0.0179	0.0173	0.0017	0.0006	-0.0100
1997-1-31	0.0310	0.0312	0.0539	0.0383	0.1086
1997-2-28	0.0078	0.0174	0.0071	0.0305	0.0302
1997-3-31	-0.0126	-0.0245	-0.0016	-0.0051	0.0097
1997-4-30	-0.0055	-0.0050	0.0089	0.0104	0.0172
1997-5-30	0.0101	0.0065	-0.0054	0.0157	-0.0351
1997-6-30	-0.0054	-0.0208	-0.0220	-0.0163	-0.0105
1997-7-31	0.0210	-0.0141	-0.0231	-0.0058	-0.0405
1997-8-29	0.0257	0.0419	0.0374	0.0231	0.0118
1997-9-30	0.0502	0.0409	0.0473	0.0275	0.0002
1997-10-31	-0.0232	-0.0079	0.0268	0.0175	0.0100
1997-11-28	0.0120	0.0014	-0.0098	-0.0034	-0.0204
1997-12-31	0.0193	0.0341	0.0022	0.0161	-0.0080
1998-1-30	0.0443	0.0252	0.0246	0.0403	-0.0044
1998-2-27	0.0735	0.0499	0.0106	0.0244	0.0468
1998-3-31	0.0523	0.0437	0.0672	0.0634	0.0780
1998-4-30	0.0095	0.0083	0.0193	-0.0065	-0.0039
1998-5-29	0.0277	0.0324	0.0567	0.0635	0.0626
1998-6-30	-0.0488	-0.0235	-0.0480	-0.0505	-0.0439
1998-7-31	-0.0352	-0.0270	-0.0549	-0.0547	-0.0622
1998-8-31	-0.1153	-0.1107	-0.0784	-0.0749	-0.1034
1998-9-30	-0.0582	-0.0561	-0.0645	-0.0295	-0.0157
1998-10-30	0.0352	0.0136	-0.0309	-0.0556	-0.0382
1998-11-30	0.0436	0.0323	-0.0274	0.0102	0.0056
1998-12-31	0.0191	0.0100	0.0011	0.0041	-0.0182
1999-1-29	0.0175	0.0484	0.0572	0.0333	0.0059
1999-2-26	0.0414	0.0565	0.0599	0.0434	-0.0070
1999-3-31	0.0356	0.0504	0.0617	0.0262	0.0313
1999-4-30	0.0522	0.0643	0.1069	0.0639	0.1645

1999-5-31	-0.0157	-0.0151	-0.0255	0.0305	0.0188
1999-6-30	0.0204	0.0252	0.0540	0.0540	0.0219
1999-7-30	0.0224	0.0057	0.0292	0.0256	0.0358
1999-8-31	0.0182	0.0262	0.0337	0.0344	0.1124
1999-9-30	-0.0410	-0.0065	-0.0309	0.0093	0.0018
1999-10-29	-0.0038	0.0177	0.0227	0.0152	0.0318
1999-11-30	0.1216	0.0748	0.1092	0.1134	0.4852
1999-12-31	0.1074	0.0514	0.0314	0.0476	0.1337
2000-1-31	-0.0556	-0.0146	0.0137	0.0812	0.0564
2000-2-29	0.0329	0.0006	0.0186	0.0349	-0.0095
2000-3-31	0.0307	0.0220	-0.0373	0.0163	0.0183
2000-4-28	-0.0062	-0.0846	-0.0255	-0.0738	-0.0922
2000-5-31	-0.0023	-0.0107	-0.0069	-0.0317	-0.0471
2000-6-30	0.0514	0.0608	0.0666	0.0367	-0.0080
2000-7-31	0.0233	0.0088	0.0038	0.0152	0.0303
2000-8-31	0.0877	0.0513	0.0236	0.0478	0.0119
2000-9-29	-0.0404	-0.0338	-0.0248	-0.0067	-0.0127
2000-10-31	0.0117	-0.0173	-0.0311	-0.0719	-0.0454
2000-11-30	0.0214	-0.0366	-0.0444	-0.0933	-0.0740
2000-12-29	0.0183	0.0252	0.0071	0.0162	-0.0004
2001-1-31	0.0180	0.0445	0.0715	0.0180	0.0388
2001-2-28	0.0107	-0.0696	-0.0288	-0.0478	-0.0297
2001-3-30	-0.0651	-0.1135	-0.0913	-0.1075	-0.0749
2001-4-30	0.0528	0.0518	0.0346	0.0289	0.0172
2001-5-31	0.0068	0.0175	0.0160	0.0124	0.0443
2001-6-29	-0.0305	-0.0485	-0.0570	-0.0709	-0.0714
2001-7-31	-0.0262	-0.0594	-0.0567	-0.0600	-0.0617
2001-8-31	-0.0042	-0.0167	-0.0036	-0.0176	-0.0073
2001-9-28	-0.1408	-0.1634	-0.1844	-0.1812	-0.2064
2001-10-31	0.0531	0.0566	0.0697	0.0588	0.0942
2001-11-30	0.0838	0.1265	0.1015	0.0660	0.0263
2001-12-31	0.0124	0.0160	0.0161	0.0034	-0.0253
2002-1-31	-0.0009	-0.0120	-0.0044	-0.0473	-0.0032
2002-2-28	-0.0209	-0.0295	-0.0187	-0.0391	-0.0441
2002-3-29	0.0435	0.0561	0.0493	0.0269	-0.0052
2002-4-30	0.0000	0.0123	0.0110	0.0169	0.0013
2002-5-31	0.0031	0.0131	0.0062	-0.0413	0.0072
2002-6-28	-0.0775	-0.0812	-0.0915	-0.1023	-0.0802
2002-7-31	-0.1115	-0.0847	-0.1213	-0.0542	-0.1076
2002-8-30	0.0313	-0.0113	-0.0340	-0.0506	-0.0284
2002-9-30	-0.1051	-0.1198	-0.1434	-0.1606	-0.0858
2002-10-31	0.0296	0.0044	0.0298	0.0864	0.0090
2002-11-29	0.0149	0.0701	0.0699	0.0603	0.0824

2002-12-31	-0.0601	-0.0016	-0.0397	-0.0591	-0.0379
2003-1-31	-0.0759	-0.0261	-0.0093	-0.0273	-0.0805
2003-2-28	0.0006	0.0100	-0.0142	-0.0043	-0.0891
2003-3-31	-0.0111	-0.0131	0.0023	-0.0514	-0.0802
2003-4-30	0.1272	0.0636	0.1122	0.1395	0.1027
2003-5-30	0.0898	0.0896	0.1304	0.0778	0.2125
2003-6-30	0.0448	0.0571	0.0808	0.0686	0.0850
2003-7-31	0.0859	0.0415	0.0570	0.0771	0.0619
2003-8-29	0.0316	0.0515	0.0826	0.1601	0.2400
2003-9-30	-0.0056	-0.0015	-0.0028	-0.0420	-0.0017
2003-10-31	0.0227	0.0294	0.0812	0.1340	0.0924
2003-11-28	0.0089	-0.0146	-0.0277	-0.0001	0.0086
2003-12-31	0.0323	0.0160	0.0334	-0.0168	0.0497
2004-1-30	0.0204	0.0563	0.0598	0.1319	0.4039
2004-2-27	0.0508	0.0211	0.0424	0.0449	0.1096
2004-3-31	0.0091	0.0192	-0.0234	-0.0665	-0.0118
2004-4-30	0.0088	-0.0132	0.0190	0.0312	-0.0038
2004-5-31	-0.0160	-0.0306	-0.0386	-0.0347	-0.0574
2004-6-30	0.0444	0.0331	0.0268	0.0199	0.0208
2004-7-30	-0.0287	-0.0182	-0.0404	-0.0330	-0.0893
2004-8-31	0.0120	0.0024	-0.0105	0.0009	-0.0305
2004-9-30	0.0378	0.0252	0.0123	-0.0079	0.0687
2004-10-29	0.0196	0.0150	0.0371	0.0119	0.0167
2004-11-30	0.0387	0.0214	0.0018	-0.0061	0.0324
2004-12-31	0.0522	0.0400	0.0656	0.0105	-0.0162
2005-1-31	0.0207	0.0561	0.0509	0.0432	0.0436
2005-2-28	0.0194	0.0105	0.0335	0.0156	0.0349
2005-3-31	-0.0163	0.0003	-0.0300	-0.0109	-0.1119
2005-4-29	-0.0309	-0.0293	-0.0287	-0.0410	-0.0938
2005-5-31	0.0646	0.0424	-0.0212	0.0076	-0.0032
2005-6-30	0.0410	0.0434	0.0483	0.0176	-0.0140
2005-7-29	0.0277	0.0234	0.0239	0.0079	0.0038
2005-8-31	0.0292	0.0175	0.0157	0.0083	0.0949
2005-9-30	0.0256	0.0126	-0.0389	0.0056	0.0241
2005-10-31	-0.0232	-0.0315	-0.0380	-0.0758	-0.0633
2005-11-30	0.0605	0.0666	0.0491	0.0554	-0.0151
2005-12-30	0.0706	0.0505	0.0097	0.0056	-0.0097
2006-1-31	0.0064	0.0373	0.0174	0.0086	0.0983
2006-2-28	0.0259	0.0354	0.0387	0.0410	0.0748
2006-3-31	0.0123	0.0505	0.0054	0.0419	0.0609
2006-4-28	0.0148	0.0000	0.0028	0.0386	0.0418
2006-5-31	-0.0358	-0.0235	-0.0427	-0.0345	-0.0403
2006-6-30	0.0117	0.0389	-0.0029	-0.0317	-0.0706

2006-7-31	0.0172	-0.0104	-0.0043	-0.0292	-0.0032
2006-8-31	0.0287	0.0126	0.0089	0.0164	0.0001
2006-9-29	0.0498	0.0425	0.0268	0.0026	0.0159
2006-10-31	0.0285	0.0289	0.0206	0.0362	0.0188
2006-11-30	0.0094	0.0318	0.0433	0.0346	-0.0067
2006-12-29	0.0528	0.0374	0.0638	0.0519	0.0801
2007-1-31	0.0090	0.0041	0.0144	0.0308	0.0468
2007-2-28	0.0027	0.0019	0.0054	0.0198	0.0120
2007-3-30	0.0312	0.0462	0.0241	0.0295	-0.0028
2007-4-30	0.0136	0.0243	0.0360	0.0317	0.0771
2007-5-31	0.0212	0.0097	0.0383	0.0429	0.0526
2007-6-29	-0.0260	-0.0408	-0.0203	0.0138	0.0291
2007-7-31	-0.0258	-0.0025	-0.0007	-0.0255	0.0745
2007-8-31	-0.0070	-0.0150	-0.0362	-0.0565	-0.0530
2007-9-28	-0.0193	-0.0410	-0.0184	-0.0180	-0.0588
2007-10-31	0.0317	0.0604	0.0162	0.0023	0.0340
2007-11-30	-0.0487	-0.1138	-0.1120	-0.0721	-0.0767
2007-12-31	-0.0109	-0.0270	-0.0124	-0.0328	-0.0105
2008-1-31	-0.0583	-0.0571	-0.0731	-0.0825	-0.1216
2008-2-29	-0.0399	0.0373	0.0524	0.0521	0.0421
2008-3-31	-0.0095	-0.0235	-0.0391	-0.0015	-0.0577
2008-4-30	0.0198	0.0584	0.0129	0.0176	0.0159
2008-5-30	-0.0334	-0.0217	0.0325	-0.0141	-0.0002
2008-6-30	-0.1165	-0.0566	-0.0712	-0.0528	-0.0558
2008-7-31	-0.0068	-0.0049	-0.0633	-0.0801	-0.1392
2008-8-29	0.0623	0.0591	0.0053	0.0289	0.0503
2008-9-30	-0.1198	-0.1666	-0.1606	-0.0821	-0.1749
2008-10-31	-0.1390	-0.1557	-0.2265	-0.1725	-0.0851
2008-11-28	-0.0345	-0.0436	-0.0684	-0.0895	-0.0122
2008-12-31	0.0529	0.0376	0.0078	-0.0605	-0.0092

Table A.II

Portfolio returns for one holding period associated with the turnover rate from January 1993 to December 2008

	P_H	P_4	P_3	P_2	P_L
1993-1-29	0.175228	0.064379	0.027496	0.077275	0.059484
1993-2-26	0.101211	0.018851	0.005084	0.024855	0.03706
1993-3-31	0.054918	0.049796	0.012917	0.045968	0.017884
1993-4-30	0.049079	0.047608	0.049518	0.000725	0.032648
1993-5-31	0.057176	0.04292	0.044503	0.013902	0.025383
1993-6-30	0.067152	0.014132	-0.00484	0.043899	0.016354
1993-7-30	-0.00952	-0.01011	0.021835	0.02194	0.041799
1993-8-31	0.079416	0.092273	0.083837	0.066078	0.094038
1993-9-30	0.005921	0.016879	-0.00589	-0.03443	-0.008
1993-10-29	0.011363	0.004157	0.052448	0.037493	0.04865
1993-11-30	0.012087	-0.03684	-0.02602	-0.04128	-0.02963
1993-12-31	0.061688	0.1259	0.07788	0.07222	0.067622
1994-1-31	0.207172	0.106505	0.113346	0.087685	0.121426
1994-2-28	0.007985	0.006096	-0.02662	0.009861	-0.03082
1994-3-31	-0.07201	-0.0756	-0.07488	-0.061	-0.04218
1994-4-29	0.02895	-0.00818	-0.00667	0.016509	0.022871
1994-5-31	-0.03167	-0.06034	-0.05064	-0.0541	-0.00979
1994-6-30	-0.05941	-0.04777	-0.03601	-0.05306	-0.0178
1994-7-29	0.012879	0.044255	0.07298	0.031325	0.051129
1994-8-31	0.006291	0.043589	0.045329	0.036137	0.034376
1994-9-30	-0.06452	-0.04376	-0.07555	-0.06881	-0.04487
1994-10-31	-0.03528	-0.02356	-0.01958	-0.00049	-0.01211
1994-11-30	-0.04822	-0.00469	-0.01686	-0.00506	0.004104
1994-12-30	-0.00546	-0.01031	0.013104	-0.00098	-0.00432
1995-1-31	-0.02228	-0.01834	-0.02543	-0.01921	-0.02108
1995-2-28	-0.01507	-0.03195	-0.00712	-0.04106	-0.04662
1995-3-31	0.019866	-0.00217	0.02662	0.019085	-0.00061
1995-4-28	0.016648	0.013694	0.023742	0.037486	0.062319
1995-5-31	0.061959	0.054229	0.080493	0.050219	0.041629
1995-6-30	0.029785	-0.02022	-0.02598	-0.04484	-0.00051
1995-7-31	0.038806	0.040628	0.057378	0.069442	0.073618
1995-8-31	0.040459	0.013084	0.027285	0.067859	0.024222
1995-9-29	0.024761	0.018833	-0.00819	0.019139	0.033702
1995-10-31	0.00685	-0.02485	-0.01567	-0.03211	0.008592
1995-11-30	0.023648	0.008756	-0.00711	0.028675	0.072987
1995-12-29	0.01726	-0.02245	0.031326	0.014996	0.056929

1996-1-31	0.02766	0.000928	0.032224	0.040006	0.024787
1996-2-29	0.001821	0.015101	0.017435	0.01036	0.015582
1996-3-29	0.034381	0.005634	0.034766	-0.00846	0.033845
1996-4-30	0.055403	0.071867	0.057233	0.053816	0.068837
1996-5-31	0.046327	0.026085	0.013476	0.007693	0.045755
1996-6-28	-0.02681	-0.00671	-0.02488	-0.02211	-0.03262
1996-7-31	-0.0361	-0.03259	-0.04257	-0.02845	0.001063
1996-8-30	0.019134	0.026006	0.050811	0.027015	0.064329
1996-9-30	5.51E-05	0.031312	0.012236	-0.02843	0.010693
1996-10-31	-0.0076	-0.00226	-0.03291	0.015706	-0.00449
1996-11-29	-0.01625	-0.00407	0.009414	-0.01961	0.044994
1996-12-31	-0.00443	0.029299	-0.02098	0.025499	0.024591
1997-1-31	0.063465	0.046691	0.047016	0.049584	0.029726
1997-2-28	0.009976	0.027916	-0.00891	0.003241	0.018191
1997-3-31	0.005867	-0.01098	-0.03272	-0.02056	-0.00914
1997-4-30	0.023486	-0.01141	0.005827	0.016115	-0.00516
1997-5-30	-0.0301	-0.01492	-0.00579	-0.0007	0.016229
1997-6-30	-0.02779	0.021068	-0.01627	-0.01691	-0.01959
1997-7-31	-0.05133	-0.01746	-0.00405	-0.0204	0.032305
1997-8-29	0.000545	0.033719	0.015713	0.040505	0.048049
1997-9-30	0.002269	0.007458	0.035881	0.048083	0.06377
1997-10-31	0.037492	0.008681	0.008046	0.00452	-0.01318
1997-11-28	-0.03301	0.00475	0.011924	-0.01035	0.026097
1997-12-31	-0.01895	-0.00013	0.027443	0.024992	0.039144
1998-1-30	0.022894	-0.00383	0.014507	0.031305	0.064156
1998-2-27	0.014175	0.029372	0.032712	0.055152	0.056777
1998-3-31	0.042777	0.077819	0.059607	0.054967	0.074594
1998-4-30	0.02197	-0.00556	0.013961	-0.00229	0.010455
1998-5-29	0.036869	0.050426	0.045438	0.024084	0.025648
1998-6-30	-0.05673	-0.03629	-0.02703	-0.06869	-0.00461
1998-7-31	-0.07622	-0.0693	-0.02497	-0.0335	0.000382
1998-8-31	-0.08475	-0.09648	-0.08686	-0.10324	-0.11356
1998-9-30	-0.06063	-0.03558	-0.02607	-0.04321	-0.06593
1998-10-30	-0.04621	-0.07394	0.003861	-0.00704	0.023059
1998-11-30	0.01226	0.039305	0.036694	-0.00278	-0.01553
1998-12-31	-0.01186	0.0158	-0.0024	0.018782	0.023242
1999-1-29	-0.01341	0.02305	0.01367	0.05677	0.103252
1999-2-26	0.006753	0.024083	0.046221	0.057977	0.059786
1999-3-31	0.031252	0.027579	0.027093	0.072853	0.04901
1999-4-30	0.101712	0.064547	0.077568	0.116051	0.123946
1999-5-31	0.010021	0.009813	-6.4E-05	-0.00739	-0.04368
1999-6-30	0.026756	0.020932	0.011648	0.027084	0.047227
1999-7-30	0.031749	0.025244	0.021655	0.02002	0.03995

1999-8-31	0.028939	0.020966	0.016743	0.039897	0.068922
1999-9-30	-0.00799	0.00274	-0.02963	-0.03145	-0.02823
1999-10-29	0.047749	-0.00482	0.025698	-0.0012	0.035743
1999-11-30	0.424295	0.097824	0.073119	0.127455	0.147553
1999-12-31	0.070084	0.114319	0.029258	0.073415	0.089176
2000-1-31	0.040035	0.039889	-0.00661	0.000549	0.002477
2000-2-29	0.031267	0.034347	0.000698	0.027029	0.041282
2000-3-31	-0.02595	0.004783	0.003449	0.050097	-0.00641
2000-4-28	-0.11617	-0.04088	-0.00173	-0.02059	-0.12532
2000-5-31	-0.02855	0.010571	0.000975	-0.03146	-0.08078
2000-6-30	0.018483	0.046904	0.068209	-0.00013	0.055503
2000-7-31	-0.00191	0.021152	0.011916	0.02971	-0.01685
2000-8-31	0.033649	0.016911	0.041312	0.037244	0.073141
2000-9-29	-0.02031	-0.02723	0.002011	-0.0571	-0.05376
2000-10-31	-0.05465	-0.0243	-0.00125	-0.03797	-0.05105
2000-11-30	-0.07504	-0.02796	0.021216	-0.04344	-0.12713
2000-12-29	0.014402	0.023585	0.026496	0.026054	-0.02841
2001-1-31	0.004506	0.039693	1.44221	0.056516	0.062239
2001-2-28	-0.05387	-0.01495	-1.93546	-0.02593	-0.06025
2001-3-30	-0.13409	-0.02997	-6.04921	-0.05573	-0.11589
2001-4-30	0.012554	0.033859	0.034007	0.041921	3.353599
2001-5-31	0.006731	0.032763	0.029345	0.005225	1.060514
2001-6-29	-0.09498	-0.05459	-0.04771	-0.04808	-2.22284
2001-7-31	-0.04719	-0.03148	-0.06658	-0.05425	-0.06693
2001-8-31	-0.00771	0.011424	-0.01384	-0.01763	-0.02019
2001-9-28	-0.18963	-0.15379	-0.18252	-0.14037	-0.20799
2001-10-31	0.05535	0.054208	0.046451	0.066488	0.119659
2001-11-30	0.042877	0.056621	0.084402	0.100495	0.12144
2001-12-31	-0.03078	0.019193	-0.00095	0.029212	0.006586
2002-1-31	0.003885	-0.02962	0.006834	-0.01823	-0.02715
2002-2-28	-0.04694	0.000828	-0.01735	-0.02384	-0.05756
2002-3-29	-0.04902	0.035542	0.027396	0.099134	0.050136
2002-4-30	-0.00994	0.032751	0.021589	0.000896	-0.00507
2002-5-31	0.0049	0.006724	0.01071	-0.00792	-0.02555
2002-6-28	-0.05906	-0.05542	-0.10059	-0.09955	-0.09844
2002-7-31	-0.10325	-0.08483	-0.08354	-0.10906	-0.09099
2002-8-30	-0.07401	-0.01551	-0.01633	0.016627	-0.06861
2002-9-30	-0.12411	-0.06433	-0.11807	-0.13403	-7.7518
2002-10-31	0.029007	0.00238	0.075539	0.002148	2.415058
2002-11-29	0.042483	0.009817	0.064532	0.08686	4.308278
2002-12-31	-0.07873	-0.015	-0.04674	0.004946	-3.58774
2003-1-31	0.017119	-0.04421	-0.05433	-0.04323	-0.06521
2003-2-28	-0.06811	-0.01163	-0.03771	0.021152	0.012261

2003-3-31	-0.03467	0.009948	-0.05829	-0.03476	-0.01521
2003-4-30	0.064233	0.054048	0.10593	0.131267	0.127585
2003-5-30	0.119795	0.079553	0.1374	0.101327	0.100162
2003-6-30	0.124391	0.061296	0.074048	0.060081	0.093052
2003-7-31	0.024466	0.01971	0.070323	0.072977	0.07254
2003-8-29	0.097294	0.116276	0.063616	0.115638	0.082472
2003-9-30	0.020141	0.045695	0.005683	-0.05847	-0.02832
2003-10-31	0.058127	0.057108	0.066495	0.06793	0.084587
2003-11-28	0.018175	-0.015	0.010952	-0.03401	-0.00449
2003-12-31	0.000247	0.021415	0.054986	-0.00529	0.032084
2004-1-30	0.166768	0.118582	0.085826	0.104547	0.127925
2004-2-27	0.055886	0.035477	0.056502	0.040892	0.053618
2004-3-31	0.032351	-0.00487	-0.04606	-0.01362	-0.03404
2004-4-30	0.011363	-0.00836	0.031869	0.011254	-0.00621
2004-5-31	-0.03026	-0.03274	-0.01831	-0.04064	-0.03879
2004-6-30	-0.00124	0.018232	0.048627	0.036762	0.030669
2004-7-30	-0.05185	-0.0239	-0.00911	-0.04471	-0.05844
2004-8-31	-0.02528	-0.01116	0.000998	0.286547	0.00543
2004-9-30	0.040552	0.031116	0.01116	1.286272	0.014646
2004-10-29	-0.00399	0.023307	0.018746	1.038509	0.031031
2004-11-30	-0.03052	0.007776	0.037042	1.210717	0.043033
2004-12-31	-0.0154	0.0298	0.050548	2.10489	0.024699
2005-1-31	0.029017	0.051453	0.048823	0.048334	0.020842
2005-2-28	0.034484	0.00721	0.005218	0.008522	0.051734
2005-3-31	-0.06337	-0.02897	-0.01035	-0.02572	-0.02683
2005-4-29	-0.06149	-0.02143	-0.04944	-0.03474	-0.05398
2005-5-31	0.011593	-0.00431	0.013849	0.02111	0.047003
2005-6-30	-0.01812	0.022577	0.027786	0.054011	0.047958
2005-7-29	0.011346	0.014318	0.024463	0.013091	0.022064
2005-8-31	0.01727	-0.03627	0.038377	0.045648	0.098918
2005-9-30	0.016284	0.013181	-0.00012	-0.00516	0.004238
2005-10-31	-0.02932	-0.04942	-0.05854	-0.05244	-0.03761
2005-11-30	0.027593	0.039668	0.046276	0.057852	0.040986
2005-12-30	-0.02176	0.028635	0.032291	0.036244	0.049407
2006-1-31	-0.01239	0.063759	0.063125	0.018858	0.024285
2006-2-28	0.061372	0.060921	0.041121	0.008099	0.02991
2006-3-31	0.083966	-0.02857	0.032936	0.036422	0.034451
2006-4-28	0.035257	0.038436	0.002485	0.003073	0.014181
2006-5-31	-0.02132	-0.0226	-0.03676	-0.04503	-0.0379
2006-6-30	-0.04008	-0.00688	-0.00431	-0.01479	0.013306
2006-7-31	-0.03649	0.006471	0.025081	-0.02066	-0.00304
2006-8-31	0.014408	0.008903	-0.00684	0.020159	0.02742
2006-9-29	-0.00286	0.022579	0.060778	0.018507	0.033262

2006-10-31	0.016985	0.033116	0.041006	0.002164	0.034665
2006-11-30	0.032459	0.019938	0.026508	0.00681	0.021139
2006-12-29	0.026972	0.111504	0.057026	0.02878	0.052479
2007-1-31	0.035424	0.035514	0.010367	0.00369	0.01251
2007-2-28	0.02624	-0.01319	0.020527	-0.00365	0.009216
2007-3-30	-0.02937	0.03589	0.017799	0.04455	0.053541
2007-4-30	0.083602	0.013088	0.005747	0.030721	0.037782
2007-5-31	0.041175	0.019811	0.048439	0.015981	0.030223
2007-6-29	0.01967	-0.01471	0.007887	-0.03075	-0.02859
2007-7-31	0.080621	-0.01016	-0.01541	-0.04232	0.007342
2007-8-31	-0.05648	-0.02628	-0.03955	-0.02207	-0.02036
2007-9-28	-0.01687	-0.05256	-0.02374	-0.04397	-0.01524
2007-10-31	0.019098	-0.01241	0.041082	0.036776	0.06108
2007-11-30	-0.07013	-0.07312	-0.08976	-0.08308	-0.10413
2007-12-31	-0.04531	-0.01661	-0.00065	-0.01204	-0.01791
2008-1-31	-0.08501	-0.05454	-0.106	-0.0405	-0.08228
2008-2-29	0.019821	-0.02252	0.096512	0.045542	-0.00217
2008-3-31	0.005389	-0.02713	-0.06677	-0.00412	-0.03096
2008-4-30	0.042798	-0.00231	0.001969	0.022362	0.054688
2008-5-30	0.002498	-0.01206	-0.01564	-0.01769	0.008581
2008-6-30	-0.04525	-0.06626	-0.05426	-0.06117	-0.13134
2008-7-31	-0.09828	-0.08521	-0.0731	-0.0237	-0.0055
2008-8-29	0.033456	0.062904	-0.0061	0.052504	0.064741
2008-9-30	-0.09046	-0.11008	-0.19172	-0.12883	-0.18674
2008-10-31	-0.09747	-0.12724	-0.2151	-0.16336	-0.16416
2008-11-28	-0.05406	-0.05543	-0.01086	-0.06113	-0.05746
2008-12-31	-0.01465	0.00083	-0.00985	0.03974	0.011151

Table A.III

Univariate cross-sectional regressions from January 1993 to December 2008

Panel A corresponds with cross-sectional regressions on the relative bid-ask spread; panel B corresponds with regressions on the turnover rate; panel C corresponds with regressions on the book-to-market ratio and panel D corresponds with regressions on the market value.

Panel A

	$BA_{i,t-1\to t-12}$	Std deviation	Constant	Std deviation
Jan-93	0.49077	0.711648	0.036179	0.02906
Feb-93	0.129327	0.222717	0.017023	0.014121
Mar-93	0.428535	0.224943	0.012927	0.014954
Apr-93	0.489529	0.249938	0.016842	0.016282
May-93	1.018281	0.358	-0.011024	0.023378
Jun-93	0.408192	0.206009	0.012764	1.368271
Jul-93	-0.280459	0.18742	0.03774	0.012239
Aug-93	0.221127	0.174014	0.067872	0.011364
Sep-93	0.121171	0.20093	-0.020261	0.013184
Oct-93	0.179248	0.222168	0.028576	0.014508
Nov-93	-0.469565	0.172976	-0.006632	0.01135
Dec-93	0.450632	0.207142	0.055981	0.013591
Jan-94	0.855599	0.30549	0.083959	0.016415
Feb-94	0.302014	0.243851	-0.022844	0.013074
Mar-94	0.052859	0.173312	-0.065121	0.009241
Apr-94	-0.047938	0.208224	0.018068	0.011022
May-94	0.447186	0.192822	-0.051665	0.010612
Jun-94	-0.40009	0.165206	-0.030668	0.009188
Jul-94	-0.466547	0.172902	0.066208	0.009515
Aug-94	-0.320072	0.19025	0.047297	0.010044
Sep-94	0.050588	0.167955	-0.068691	0.008867
Oct-94	-0.278447	0.163784	-0.008611	0.008647
Nov-94	-0.174903	0.180982	-0.005288	0.009555
Dec-94	-0.296115	0.14629	0.003331	0.007723
Jan-95	0.218371	0.15624	-0.032599	0.006952
Feb-95	-0.606057	0.20977	0.000592	0.009431
Mar-95	-0.596427	0.226926	0.038949	0.010171
Apr-95	-0.218225	0.338937	0.033702	0.014966
May-95	0.442224	0.317127	0.044749	0.014131
Jun-95	-0.209083	0.175513	-0.017446	0.007873
Jul-95	-0.421814	0.241547	0.076489	0.010835
Aug-95	0.72447	0.360803	0.022807	0.016184
Sep-95	-0.065619	0.23908	0.015835	0.011269
Oct-95	0.110907	0.228721	-0.025968	0.010362

Nov-95	0.57087	0.305007	0.001313	0.013818
Dec-95	-0.224982	0.183206	0.013942	0.00833
Jan-96	-0.413651	0.191651	0.041162	0.010468
Feb-96	-0.064291	0.166521	0.013497	0.009123
Mar-96	0.056821	0.189395	0.023033	0.011336
Apr-96	-0.404178	0.228966	0.081858	0.013771
May-96	0.359781	0.187857	0.009372	0.011247
Jun-96	-0.173559	0.122169	-0.017734	0.007314
Jul-96	-0.066804	0.164026	-0.030787	0.00982
Aug-96	-0.234567	0.146601	0.042871	0.008777
Sep-96	-0.016462	0.143765	0.006453	0.008634
Oct-96	-0.011318	0.162952	-0.00219	0.009818
Nov-96	-0.132802	0.156116	-0.000708	0.009435
Dec-96	-0.316969	0.166037	0.016695	0.010034
Jan-97	0.252677	0.232083	0.044673	0.013826
Feb-97	0.344069	0.250371	0.00598	0.013852
Mar-97	-0.118844	0.213323	-0.010896	0.011803
Apr-97	0.192977	0.17933	-0.007866	0.01002
May-97	-0.012429	0.208582	-0.004772	0.01165
Jun-97	-0.537926	0.174736	-0.002075	0.009769
Jul-97	-0.444431	0.188604	0.0071	0.010567
Aug-97	-0.485816	0.194969	0.057498	0.010923
Sep-97	-0.348104	0.174365	0.051471	0.009769
Oct-97	-0.237206	0.252137	0.011816	0.014126
Nov-97	0.153352	0.22252	0.000668	0.012466
Dec-97	-0.154346	0.18745	0.011706	0.010528
Jan-98	-0.326451	0.180938	0.032338	0.012456
Feb-98	-0.371383	0.177799	0.050473	0.012273
Mar-98	0.265646	0.186019	0.048856	0.015352
Apr-98	0.127783	0.123543	-0.004038	0.009846
May-98	-0.141844	0.161782	0.046676	0.012429
Jun-98	0.084064	0.272362	-0.042548	0.020021
Jul-98	0.223133	0.168779	-0.057234	0.012267
Aug-98	-0.111101	0.16588	-0.105667	0.012217
Sep-98	-0.245346	0.215008	-0.042143	0.015788
Oct-98	-0.542471	0.18055	0.028657	0.013225
Nov-98	0.018812	0.180103	0.021236	0.013377
Dec-98	0.105897	0.180316	0.002989	0.013476
Jan-99	-0.434129	0.188535	0.055712	0.015119
Feb-99	-0.150836	0.163318	0.05762	0.013155
Mar-99	-0.069417	0.186763	0.051671	0.015061
Apr-99	1.125285	0.247081	0.052409	0.019989
May-99	0.273965	0.143182	-0.019927	0.011663

Jun-99	-0.210863	0.132191	0.036607	0.010768
Jul-99	0.897174	0.190927	-0.011537	0.015593
Aug-99	-0.164625	0.139624	0.045676	0.011408
Sep-99	0.101789	0.136835	-0.040548	0.011149
Oct-99	0.047471	0.198599	0.016552	0.016173
Nov-99	0.607003	0.525772	0.112865	0.042976
Dec-99	0.074897	0.247353	0.045438	0.020281
Jan-00	0.802947	0.264534	-0.035289	0.020264
Feb-00	0.035817	0.271391	0.019304	0.020839
Mar-00	-0.160593	0.210867	0.017094	0.016148
Apr-00	-0.260844	0.196497	-0.02877	0.015012
May-00	-0.158093	0.168827	-0.013144	0.012964
Jun-00	-0.522215	0.188282	0.075566	0.01449
Jul-00	0.264072	0.181105	0.008603	0.014007
Aug-00	-0.318813	0.1655	0.059466	0.012833
Sep-00	0.248531	0.146216	-0.049307	0.011338
Oct-00	-0.314665	0.15574	-0.008482	0.012231
Nov-00	-0.132465	0.217054	-0.023311	0.016937
Dec-00	-0.036034	0.17814	0.023526	0.013881
Jan-01	-0.202081	0.2638	0.055869	0.018597
Feb-01	0.224143	0.204189	-0.050382	0.014548
Mar-01	0.029338	0.250782	-0.097474	0.017912
Apr-01	-0.266179	0.195952	0.054326	0.013847
May-01	-0.017143	0.184703	0.025249	0.013252
Jun-01	-0.440529	0.248585	-0.042931	0.017836
Jul-01	0.233521	0.222633	-0.0759	0.016007
Aug-01	0.116955	0.20236	-0.014505	0.014537
Sep-01	0.22426	0.245412	-0.210873	0.017657
Oct-01	-0.143698	0.328474	0.090166	0.023666
Nov-01	0.181877	0.329954	0.100675	0.023419
Dec-01	-0.012647	0.21318	-0.001393	0.015382
Jan-02	-0.288891	0.184865	-0.001884	0.013424
Feb-02	-0.276635	0.199479	-0.018125	0.014502
Mar-02	-0.430892	0.244887	0.0694	0.017729
Apr-02	-0.130817	0.219461	0.014758	0.016254
May-02	-0.011709	0.182932	-0.003727	0.013635
Jun-02	0.038484	0.145659	-0.092393	0.010767
Jul-02	-0.096345	0.167218	-0.094767	0.012201
Aug-02	-0.277074	0.21396	-0.006118	0.015675
Sep-02	0.232206	0.22735	-0.137183	0.016928
Oct-02	0.24147	0.278725	0.031507	0.020548
Nov-02	0.656635	0.239917	0.038988	0.017674
Dec-02	-0.043368	0.219123	-0.035518	0.016179

Jan-03	-0.207481	0.12377	-0.029314	0.012996
Feb-03	-0.266637	0.110539	0.006814	0.011601
Mar-03	-0.134902	0.12245	-0.017976	0.012851
Apr-03	0.196342	0.167251	0.098155	0.017016
May-03	-0.031046	0.082905	0.095707	0.01731
Jun-03	0.858017	0.175071	0.017285	0.017899
Jul-03	-0.456195	0.149032	0.096829	0.015003
Aug-03	0.677768	0.157278	0.056786	0.015484
Sep-03	0.181355	0.150796	-0.018723	0.015222
Oct-03	0.298722	0.155955	0.04222	0.015743
Nov-03	-0.113122	0.110772	-0.004141	0.011207
Dec-03	0.134958	0.10618	0.011752	0.010674
Jan-04	0.80546	0.200739	0.02713	0.019555
Feb-04	0.08235	0.142159	0.041397	0.013978
Mar-04	-0.482313	0.099664	0.007022	0.009824
Apr-04	0.053981	0.09576	0.00808	0.009749
May-04	-0.128595	0.072166	-0.020524	0.007317
Jun-04	0.106266	0.122706	0.029507	0.012441
Jul-04	-0.36614	0.0912	-0.014307	0.009279
Aug-04	-0.020288	0.086147	0.001105	0.008761
Sep-04	0.03006	0.096573	0.024215	0.009821
Oct-04	-0.052144	0.085627	0.024104	0.008708
Nov-04	0.02772	0.123742	0.02772	0.123742
Dec-04	-0.464249	0.09528	0.055108	0.009824
Jan-05	0.029213	0.118811	0.040613	0.010056
Feb-05	0.384958	0.131005	0.001235	0.011118
Mar-05	-0.283557	0.097811	-0.012216	0.008292
Apr-05	-0.201059	0.132349	-0.032254	0.011112
May-05	-0.035609	0.106801	0.021194	0.009013
Jun-05	-0.303923	0.102989	0.042715	0.008704
Jul-05	-0.244717	0.120826	0.034021	0.010236
Aug-05	-0.023554	0.243072	0.031856	0.02071
Sep-05	0.318971	0.153375	-0.009494	0.013105
Oct-05	-0.168972	0.106227	-0.044942	0.00906
Nov-05	-0.18604	0.12442	0.054694	0.010625
Dec-05	-0.415052	0.100867	0.043201	0.008613
Jan-06	0.862127	0.170509	-0.015352	0.013889
Feb-06	0.212207	0.230547	0.038598	0.018831
Mar-06	0.170184	0.220886	0.035649	0.018143
Apr-06	0.159418	0.136134	0.008987	0.011065
May-06	-0.17038	0.136657	-0.029115	0.011105
Jun-06	-0.444855	0.142905	0.020712	0.011609
Jul-06	0.049689	0.127248	-0.004008	0.010337

Aug-06	-0.088561	0.132188	0.017285	0.010806
Sep-06	-0.188884	0.122138	0.045029	0.010007
Oct-06	-0.2698	0.125042	0.037587	0.010246
Nov-06	-0.337261	0.115554	0.036813	0.00948
Dec-06	1.094515	0.195171	0.006585	0.016158
Jan-07	0.050548	0.142036	0.016358	0.012655
Feb-07	-0.172267	0.105146	0.014049	0.009126
Mar-07	0.334177	0.127383	0.014051	0.011134
Apr-07	0.554108	0.174137	0.004954	0.016816
May-07	-0.057038	0.109892	0.03611	0.010619
Jun-07	0.689837	0.13806	-0.046367	0.013169
Jul-07	1.323013	0.250331	-0.063502	0.023877
Aug-07	-0.131937	0.079752	-0.029327	0.007601
Sep-07	-0.13066	0.102421	-0.025103	0.009791
Oct-07	-0.005045	0.118286	0.026896	0.011375
Nov-07	0.161687	0.119183	-0.092802	0.011537
Dec-07	0.211324	0.117892	-0.031416	0.011412
Jan-08	-0.390135	0.147541	-0.0573	0.010895
Feb-08	1.094591	0.236801	-0.016709	0.017486
Mar-08	-0.429064	0.213452	-0.011322	0.014126
Apr-08	-0.169805	0.214973	0.029485	0.014197
May-08	0.128196	0.204396	-0.013776	0.013548
Jun-08	-0.181747	0.228148	-0.073561	0.015067
Jul-08	-0.942461	0.269443	-0.01903	0.017829
Aug-08	-0.196047	0.218075	0.052665	0.014385
Sep-08	-0.735536	0.264454	-0.127904	0.017449
Oct-08	0.664061	0.295803	-0.195272	0.018859
Nov-08	-0.769295	0.325197	-0.022822	0.020889
Dec-08	-0.299223	0.244597	0.040488	0.019926

Panel B

	$TO_{i,t-1\rightarrow t-12}$	Std deviation	constant	Std deviation
Jan-93	0.312458	0.200196	0.09046	0.025046
Feb-93	0.057792	0.095152	0.019253	0.01147
Mar-93	-0.020913	0.10313	0.034787	0.012598
Apr-93	0.036391	0.112073	0.037312	0.013755
May-93	-0.107706	0.163759	0.043896	0.020195
Jun-93	-0.011324	0.08726	0.036641	0.010569
Jul-93	0.006209	0.083596	0.024196	0.010309
Aug-93	0.025363	0.077345	0.076509	0.009538
Sep-93	0.037604	0.088442	-0.017094	0.010957
Oct-93	0.132512	0.09746	0.028024	0.012019

Nov-93	0.136042	0.077656	-0.038005	0.009619
Dec-93	-0.112843	0.092563	-0.112843	0.092563
Jan-94	0.026987	0.144604	0.113933	0.015961
Feb-94	-0.048474	0.113247	-0.008268	0.01238
Mar-94	0.126304	0.070588	-0.072607	0.008457
Apr-94	0.065803	0.085133	0.011399	0.010238
May-94	-0.033399	0.084536	-0.032305	0.010103
Jun-94	0.142332	0.071681	-0.056658	0.008567
Jul-94	0.00928	0.076431	0.047916	0.009134
Aug-94	0.035187	0.077892	0.032871	0.009312
Sep-94	0.040846	0.067935	-0.069877	0.008121
Oct-94	-0.015891	0.067115	-0.017688	0.008023
Nov-94	0.078765	0.073219	-0.017619	0.008753
Dec-94	-0.023738	0.060221	-0.005811	0.007199
Jan-95	0.08849	0.068992	-0.03162	0.00673
Feb-95	0.051634	0.098883	-0.021015	0.00934
Mar-95	-0.011439	0.10667	0.021467	0.010026
Apr-95	0.317077	0.150866	0.007737	0.014226
May-95	-0.048126	0.145453	0.061133	0.013676
Jun-95	0.138611	0.079539	-0.032281	0.007481
Jul-95	0.182487	0.110218	0.052463	0.010366
Aug-95	0.0615	0.166758	0.041296	0.015684
Sep-95	0.248675	0.114312	-0.001247	0.010713
Oct-95	0.197605	0.102666	-0.034485	0.009705
Nov-95	0.291621	0.13818	0.001378	0.013062
Dec-95	-0.002674	0.083586	0.007083	0.007918
Jan-96	0.050871	0.092003	0.022852	0.009747
Feb-96	0.064784	0.078596	0.007092	0.008344
Mar-96	-0.007111	0.100208	0.025692	0.010624
Apr-96	-0.008915	0.123759	0.066656	0.013084
May-96	-0.01571	0.101375	0.024251	0.010752
Jun-96	-0.028033	0.065548	-0.022689	0.006952
Jul-96	0.130411	0.0869	-0.041506	0.009217
Aug-96	0.138186	0.078049	0.025186	0.008278
Sep-96	0.068856	0.076987	0.001577	0.008101
Oct-96	0.018264	0.087361	-0.003753	0.009207
Nov-96	0.125981	0.083248	-0.01368	0.0088
Dec-96	0.071214	0.089875	-0.000115	0.009501
Jan-97	-0.067801	0.097798	0.059306	0.012774
Feb-97	0.138432	0.094818	0.008462	0.012468
Mar-97	0.081266	0.080653	-0.021242	0.010605
Apr-97	-0.045348	0.068755	0.002641	0.009009
May-97	0.051192	0.079585	-0.00898	0.01046

Jun-97	0.012759	0.068955	-0.023041	0.009062
Jul-97	0.162561	0.072172	-0.021387	0.009516
Aug-97	0.044527	0.076045	0.036132	0.010027
Sep-97	0.066742	0.067327	0.033606	0.008877
Oct-97	-0.005799	0.096629	0.003405	0.012741
Nov-97	0.056672	0.084979	0.002266	0.011165
Dec-97	0.071477	0.071498	0.000704	0.009422
Jan-98	0.512975	0.132345	-0.012534	0.012061
Feb-98	0.117545	0.136249	0.026907	0.012454
Mar-98	0.381509	0.174485	0.0392	0.016054
Apr-98	-0.061374	0.112925	0.005657	0.010419
May-98	-0.055055	0.141094	0.043464	0.013081
Jun-98	0.254527	0.224187	-0.05411	0.020843
Jul-98	0.366357	0.13608	-0.069717	0.012709
Aug-98	-0.208017	0.135797	-0.098033	0.012708
Sep-98	-0.034302	0.177888	-0.050866	0.016602
Oct-98	0.335207	0.150705	-0.015233	0.014011
Nov-98	-0.096915	0.148452	0.027967	0.013994
Dec-98	0.175529	0.148359	-0.003015	0.014069
Jan-99	0.206192	0.118086	0.021751	0.014356
Feb-99	0.06844	0.101849	0.045986	0.012435
Mar-99	0.164498	0.115536	0.037821	0.014091
Apr-99	-0.069092	0.162433	0.111418	0.019812
May-99	-0.102567	0.089634	8.87E-06	0.011034
Jun-99	0.074084	0.08261	0.021584	0.010164
Jul-99	0.196118	0.125019	0.019688	0.015419
Aug-99	0.069343	0.086752	0.033201	0.010746
Sep-99	0.048302	0.084848	-0.038783	0.010553
Oct-99	0.079978	0.122646	0.013596	0.015332
Nov-99	-0.004694	0.326349	0.142024	0.041197
Dec-99	0.192163	0.152151	0.036239	0.019308
Jan-00	-0.021321	0.103101	0.006077	0.017867
Feb-00	0.224791	0.101863	0.003243	0.017672
Mar-00	-0.024166	0.080407	0.011091	0.013917
Apr-00	-0.038574	0.075162	-0.038539	0.012983
May-00	-0.1385	0.063558	-0.009947	0.011033
Jun-00	0.107431	0.072704	0.04108	0.012654
Jul-00	-0.013427	0.069222	0.022865	0.01211
Aug-00	0.017316	0.063494	0.042109	0.011134
Sep-00	-0.121355	0.055236	-0.027112	0.009686
Oct-00	-0.083998	0.060217	-0.017665	0.010579
Nov-00	-0.235874	0.081059	-0.011013	0.014279
Dec-00	-0.240563	0.065493	0.04113	0.011569

Jan-01	0.23749	0.134351	0.029429	0.015831
Feb-01	-0.159374	0.105313	-0.028027	0.012412
Mar-01	-0.149588	0.129073	-0.085731	0.015241
Apr-01	0.05762	0.099936	0.036826	0.011857
May-01	0.013685	0.095006	0.023425	0.011315
Jun-01	0.040571	0.128888	-0.06839	0.015351
Jul-01	-0.196317	0.113966	-0.050308	0.013609
Aug-01	-0.196311	0.102407	0.005114	0.01228
Sep-01	-0.224389	0.124536	-0.183752	0.014995
Oct-01	0.817949	0.241981	0.030361	0.022328
Nov-01	0.131255	0.24635	0.101365	0.022914
Dec-01	-0.097334	0.161468	0.004246	0.015012
Jan-02	-0.021432	0.115545	-0.015989	0.01162
Feb-02	-0.080342	0.124427	-0.027979	0.012486
Mar-02	0.2621	0.157092	0.030471	0.015318
Apr-02	-0.163278	0.145503	0.017463	0.014105
May-02	-0.018959	0.12295	-0.00324	0.011848
Jun-02	0.03845	0.096913	-0.0926	0.009352
Jul-02	0.055284	0.109573	-0.103173	0.010597
Aug-02	0.227029	0.141581	-0.034277	0.013559
Sep-02	-0.049389	0.153176	-0.121665	0.014725
Oct-02	-0.1361	0.185313	0.052628	0.017945
Nov-02	0.175843	0.161661	0.063492	0.015718
Dec-02	0.008448	0.145466	-0.038351	0.014133
Jan-03	-0.092055	0.098656	-0.038467	0.011365
Feb-03	0.157113	0.088133	-0.022714	0.010188
Mar-03	0.140042	0.096851	-0.036842	0.011195
Apr-03	0.024625	0.128045	0.110375	0.014927
May-03	0.098103	0.138487	0.11508	0.015277
Jun-03	0.023728	0.141087	0.076454	0.016557
Jul-03	0.085192	0.114136	0.059594	0.013607
Aug-03	-0.18528	0.119036	0.1153	0.014221
Sep-03	0.009202	0.113542	-0.006813	0.013519
Oct-03	-0.017604	0.118059	0.064048	0.014057
Nov-03	0.060558	0.083151	-0.01607	0.009918
Dec-03	0.083492	0.079207	0.015365	0.00947
Jan-04	-0.106359	0.134903	0.086975	0.019012
Feb-04	0.000539	0.092911	0.04663	0.013094
Mar-04	0.102552	0.068398	-0.032506	0.009663
Apr-04	-0.046729	0.064957	0.015514	0.0092
May-04	0.035368	0.049106	-0.031846	0.006963
Jun-04	-0.051422	0.083015	0.040708	0.011771
Jul-04	-0.057491	0.063818	-0.033355	0.009117

Aug-04	0.113939	0.057375	-0.009688	0.00821
Sep-04	-0.106936	0.064526	0.035059	0.009233
Oct-04	0.071864	0.057429	0.014746	0.008217
Nov-04	0.097858	0.082945	0.012599	0.011969
Dec-04	0.077571	0.067882	0.018134	0.009859
Jan-05	-0.038852	0.044907	0.045804	0.009257
Feb-05	-0.024367	0.050813	0.022564	0.010453
Mar-05	0.01763	0.050162	-0.027611	0.008194
Apr-05	-0.045352	0.066256	-0.037928	0.010844
May-05	0.081444	0.05284	0.012394	0.008669
Jun-05	0.073472	0.052189	0.021745	0.008654
Jul-05	0.066612	0.060626	0.016435	0.010081
Aug-05	-0.004711	0.120817	0.031138	0.020151
Sep-05	-0.003258	0.077186	0.006234	0.01288
Oct-05	-0.005049	0.052987	-0.052615	0.008893
Nov-05	0.081179	0.061725	0.038512	0.010329
Dec-05	0.109166	0.051742	0.013464	0.008659
Jan-06	0.011361	0.08696	0.028553	0.013536
Feb-06	0.015836	0.109461	0.048369	0.017076
Mar-06	-0.013208	0.104711	0.045678	0.016428
Apr-06	-0.027623	0.063811	0.019515	0.010048
May-06	-0.044808	0.064044	-0.034217	0.010098
Jun-06	0.069991	0.068535	-0.008093	0.010848
Jul-06	0.002899	0.059441	-0.001686	0.009408
Aug-06	0.034448	0.061593	0.009781	0.009798
Sep-06	0.039877	0.05727	0.031816	0.009139
Oct-06	0.037951	0.058874	0.020346	0.009449
Nov-06	0.016755	0.05514	0.017887	0.008869
Dec-06	-0.000927	0.100541	0.064248	0.016075
Jan-07	0.019538	0.095727	0.017355	0.013024
Feb-07	0.025896	0.069203	0.003208	0.009457
Mar-07	0.077994	0.084959	0.02435	0.011718
Apr-07	-0.014236	0.135786	0.036301	0.018127
May-07	0.061121	0.082802	0.027999	0.011057
Jun-07	-0.073906	0.11165	-0.003236	0.014849
Jul-07	-0.191279	0.203893	0.023242	0.027117
Aug-07	0.008046	0.060106	-0.037019	0.008041
Sep-07	0.091372	0.076591	-0.039596	0.010281
Oct-07	0.261075	0.086112	0.005037	0.01157
Nov-07	0.154808	0.089196	-0.096894	0.01206
Dec-07	0.057349	0.089474	-0.024685	0.012098
Jan-08	0.075559	0.121322	-0.080015	0.013262
Feb-08	-0.241174	0.203282	0.049346	0.022221

Mar-08	0.093919	0.153242	-0.036027	0.016702
Apr-08	0.128977	0.151804	0.012334	0.0167
May-08	-0.03595	0.144481	-0.005764	0.015884
Jun-08	-0.259709	0.155816	-0.059482	0.017493
Jul-08	0.424415	0.190286	-0.091096	0.021377
Aug-08	0.16546	0.150025	0.031334	0.016916
Sep-08	-0.1513	0.187097	-0.144117	0.021166
Oct-08	-0.147446	0.198566	-0.15778	0.022477
Nov-08	-0.144791	0.222494	-0.040749	0.024836
Dec-08	0.759362	0.594378	-0.021905	0.022295

Panel C

	$\left[\ln \frac{B}{M}\right]_{i,t-1}$	Std deviation	Constant	Std deviation
Jan-93	0.068506	0.022292	0.025348	0.028049
Feb-93	0.035079	0.0123	0.037017	0.010547
Mar-93	0.057039	0.012477	0.051796	0.010458
Apr-93	0.015409	0.015051	0.04643	0.013206
May-93	0.042957	0.020841	0.052593	0.018316
Jun-93	-0.129769	0.011395	0.046176	0.010345
Jul-93	0.019636	0.010061	0.0288	0.00874
Aug-93	0.010419	0.008995	0.079921	0.008071
Sep-93	0.008082	0.010697	-0.012744	0.009453
Oct-93	0.011329	0.011868	0.039821	0.01054
Nov-93	-0.012274	0.00944	-0.032269	0.008537
Dec-93	0.008361	0.011241	0.080253	0.010458
Jan-94	0.029975	0.014053	0.126437	0.012969
Feb-94	0.001085	0.011379	-0.011248	0.010456
Mar-94	-0.000491	0.008316	-0.063399	0.007661
Apr-94	-0.00748	0.010093	0.012952	0.009215
May-94	0.014405	0.010036	-0.027752	0.009243
Jun-94	-0.014994	0.008904	-0.053628	0.008094
Jul-94	0.012364	0.009772	0.055408	0.008898
Aug-94	-0.005687	0.010266	0.032005	0.009622
Sep-94	0.005149	0.008849	-0.063694	0.008317
Oct-94	5.38E-05	0.008699	-0.018841	0.00835
Nov-94	-0.003049	0.009354	-0.013601	0.008938
Dec-94	0.000998	0.007931	-0.006892	0.007864
Jan-95	0.000307	0.00698	-0.025797	0.007957
Feb-95	0.012148	0.0096	-0.007428	0.010886
Mar-95	-0.009393	0.010471	0.013243	0.011333
Apr-95	-0.005993	0.014885	0.022347	0.016214
May-95	0.004675	0.014454	0.061709	0.015042

Jun-95	-0.003832	0.008575	-0.026456	0.008186
Jul-95	-0.003609	0.011723	0.060978	0.011558
Aug-95	-0.027954	0.017252	0.024229	0.017483
Sep-95	-0.017072	0.011899	0.002237	0.01153
Oct-95	-0.001313	0.010332	-0.023362	0.010014
Nov-95	0.022185	0.013778	0.03271	0.013201
Dec-95	0.005314	0.008685	0.01029	0.008206
Jan-96	-0.016462	0.009714	0.016514	0.009621
Feb-96	0.003218	0.008381	0.012945	0.008248
Mar-96	0.018255	0.009937	0.036574	0.010507
Apr-96	0.004811	0.008361	0.069615	0.012215
May-96	0.001085	0.006822	0.024124	0.010218
Jun-96	0.001508	0.004388	-0.023279	0.006557
Jul-96	0.007247	0.005784	-0.027518	0.008808
Aug-96	0.005023	0.005235	0.038006	0.008035
Sep-96	0.002604	0.004964	0.00802	0.007812
Oct-96	-0.005487	0.005561	-0.007213	0.008785
Nov-96	-0.000814	0.00538	-0.006609	0.008555
Dec-96	0.009776	0.00572	0.012743	0.009121
Jan-97	0.017412	0.007825	0.068428	0.012203
Feb-97	-0.005018	0.007858	0.014604	0.012169
Mar-97	0.003004	0.006692	-0.012807	0.010384
Apr-97	0.011201	0.005349	0.009404	0.008808
May-97	0.012731	0.006216	0.00659	0.010336
Jun-97	-0.005239	0.005476	-0.026805	0.008969
Jul-97	0.00732	0.005872	-0.003189	0.009453
Aug-97	0.006251	0.005947	0.045095	0.009918
Sep-97	0.000407	0.005295	0.03887	0.008801
Oct-97	-0.001647	0.00753	0.00151	0.012536
Nov-97	0.014271	0.006496	0.019033	0.010801
Dec-97	0.007092	0.005545	0.012345	0.009292
Jan-98	0.003637	0.006783	0.021454	0.011759
Feb-98	-0.022994	0.00633	0.01038	0.011181
Mar-98	-0.004149	0.008671	0.057751	0.015088
Apr-98	-0.007178	0.005781	-0.00454	0.00951
May-98	0.004699	0.007403	0.044295	0.01191
Jun-98	-0.015249	0.011252	-0.051366	0.018383
Jul-98	-0.019065	0.007282	-0.063532	0.011458
Aug-98	-0.003702	0.007345	-0.113783	0.011677
Sep-98	0.000973	0.009537	-0.052062	0.015282
Oct-98	-0.005508	0.008253	-0.000124	0.01317
Nov-98	-0.0008	0.011425	0.021406	0.014333
Dec-98	-0.01067	0.011417	-0.001297	0.014465

Jan-99	-0.006703	0.011942	0.029334	0.015845
Feb-99	-0.005645	0.009898	0.045467	0.013644
Mar-99	0.018741	0.011684	0.065716	0.016165
Apr-99	0.011584	0.01631	0.117365	0.022296
May-99	0.006621	0.009045	-0.000486	0.012583
Jun-99	0.001165	0.008274	0.02736	0.011329
Jul-99	-0.005052	0.012506	0.028204	0.016665
Aug-99	0.004688	0.008651	0.040862	0.010924
Sep-99	-0.001655	0.008702	-0.036648	0.010446
Oct-99	-0.00951	0.012518	0.013186	0.015024
Nov-99	0.016582	0.034089	0.151826	0.040775
Dec-99	-0.01432	0.015722	0.040201	0.019112
Jan-00	0.010384	0.017067	0.010193	0.018512
Feb-00	-0.056662	0.016808	-0.012842	0.018438
Mar-00	0.009807	0.013589	0.015236	0.014941
Apr-00	0.002607	0.013522	-0.039853	0.014664
May-00	0.023889	0.011415	-0.00583	0.012193
Jun-00	-0.00819	0.013315	0.044241	0.014328
Jul-00	-0.001113	0.012607	0.02103	0.013762
Aug-00	-0.02149	0.011387	0.028296	0.012688
Sep-00	-0.002308	0.010041	-0.038403	0.011008
Oct-00	0.005856	0.010535	-0.020454	0.01181
Nov-00	0.051697	0.013227	0.009459	0.016045
Dec-00	-0.003523	0.010743	0.018925	0.013687
Jan-01	0.00785	0.012485	0.052021	0.016455
Feb-01	0.053742	0.008218	0.005766	0.011467
Mar-01	0.04208	0.01085	-0.061186	0.014986
Apr-01	-0.001224	0.009483	0.039928	0.011768
May-01	0.010538	0.00938	0.031537	0.011201
Jun-01	0.029764	0.012418	-0.043512	0.015407
Jul-01	0.050967	0.010635	-0.026434	0.01314
Aug-01	0.027318	0.009874	0.013332	0.012674
Sep-01	0.041379	0.012373	-0.168248	0.01518
Oct-01	-0.053574	0.016995	0.046033	0.019898
Nov-01	-0.03064	0.018395	0.090246	0.020132
Dec-01	-0.005667	0.011987	-0.005786	0.013391
Jan-02	0.02983	0.008697	0.003221	0.010738
Feb-02	0.018088	0.009801	-0.021288	0.011634
Mar-02	0.003793	0.01284	0.048464	0.013939
Apr-02	0.008329	0.011764	0.013188	0.013559
May-02	0.01211	0.00996	0.003837	0.011506
Jun-02	0.020241	0.007732	-0.07777	0.008719
Jul-02	0.010493	0.009091	-0.093734	0.009899

Aug-02	-0.001442	0.011722	-0.021742	0.012645
Sep-02	0.00032	0.013095	-0.124472	0.012475
Oct-02	-0.015209	0.015187	0.038253	0.015384
Nov-02	0.023532	0.013489	0.08617	0.014106
Dec-02	0.012808	0.011964	-0.031134	0.012736
Jan-03	0.015007	0.010729	-0.036107	0.011106
Feb-03	-0.006025	0.009586	-0.015662	0.009845
Mar-03	-0.006548	0.006098	-0.021072	0.011077
Apr-03	-0.014425	0.015135	0.103823	0.014979
May-03	0.007627	0.015991	0.120933	0.015533
Jun-03	0.030947	0.017141	0.092655	0.015765
Jul-03	-0.018216	0.014354	0.059036	0.012216
Aug-03	0.031999	0.014833	0.113585	0.012669
Sep-03	-0.014099	0.013805	-0.008929	0.011427
Oct-03	0.03574	0.014207	0.070732	0.011825
Nov-03	0.002196	0.010395	-0.011431	0.008589
Dec-03	-0.013344	0.009645	0.018182	0.008053
Jan-04	-0.02392	0.018835	0.073591	0.015795
Feb-04	-0.038601	0.012483	0.040469	0.010557
Mar-04	-0.013949	0.009093	-0.025826	0.007913
Apr-04	0.013724	0.008389	0.014884	0.007667
May-04	0.009585	0.006553	-0.02566	0.006041
Jun-04	-0.005174	0.011239	0.034344	0.010567
Jul-04	0.009541	0.008603	-0.033723	0.008406
Aug-04	-0.001754	0.008083	-0.001187	0.00811
Sep-04	0.00029	0.008914	0.026317	0.008894
Oct-04	0.001035	0.008089	0.021331	0.008228
Nov-04	-0.004482	0.011883	0.018123	0.012077
Dec-04	0.0011	0.009642	0.025343	0.009983
Jan-05	0.015364	0.008748	0.052651	0.010122
Feb-05	0.011506	0.00963	0.028529	0.011544
Mar-05	0.001049	0.007254	-0.02533	0.008633
Apr-05	0.017469	0.010279	-0.029354	0.011721
May-05	-0.017145	0.008299	0.007796	0.009243
Jun-05	0.015303	0.008534	0.039198	0.009523
Jul-05	0.003049	0.009605	0.024467	0.01086
Aug-05	-0.015122	0.019375	0.020382	0.021589
Sep-05	0.02118	0.012262	0.020742	0.013816
Oct-05	0.02371	0.008267	-0.035735	0.009524
Nov-05	-0.0054	0.009773	0.041508	0.011615
Dec-05	-0.008574	0.008082	0.016318	0.009808
Jan-06	0.040222	0.013222	0.060456	0.015129
Feb-06	0.06142	0.016788	0.09835	0.019284

Mar-06	-0.050872	0.016197	0.006681	0.018151
Apr-06	-0.002928	0.010242	0.015249	0.011036
May-06	0.016063	0.010107	-0.026783	0.011049
Jun-06	0.00546	0.010154	0.001917	0.012043
Jul-06	-0.009963	0.009042	-0.008828	0.010404
Aug-06	-0.004025	0.009409	0.009669	0.010888
Sep-06	0.025084	0.008697	0.053232	0.009825
Oct-06	0.012605	0.009616	0.032136	0.010331
Nov-06	-0.008094	0.00896	0.013433	0.009944
Dec-06	0.016343	0.016027	0.076712	0.018408
Jan-07	-0.011044	0.011575	0.010749	0.013399
Feb-07	0.014041	0.008634	0.016257	0.010002
Mar-07	-0.007457	0.010858	0.024876	0.012799
Apr-07	-0.025457	0.017621	0.015696	0.019602
May-07	0.008082	0.01106	0.038801	0.011821
Jun-07	-0.011391	0.016411	-0.016915	0.016132
Jul-07	-0.017034	0.030178	-0.003477	0.029228
Aug-07	-0.005853	0.008828	-0.040255	0.008652
Sep-07	0.005399	0.011468	-0.028308	0.011438
Oct-07	-0.026935	0.013208	0.007005	0.013363
Nov-07	-0.003604	0.013346	-0.086729	0.01395
Dec-07	0.006034	0.012935	-0.014978	0.014232
Jan-08	0.006355	0.012429	-0.069021	0.013317
Feb-08	-0.034126	0.020861	0.003127	0.022412
Mar-08	0.010784	0.015512	-0.019589	0.017181
Apr-08	-0.011394	0.014251	0.013077	0.016585
May-08	-0.031996	0.013186	-0.036638	0.015662
Jun-08	0.009547	0.014525	-0.07242	0.017514
Jul-08	0.01093	0.016827	-0.046753	0.021
Aug-08	0.026126	0.01295	0.06702	0.01581
Sep-08	0.033098	0.01614	-0.130107	0.019242
Oct-08	-0.025702	0.018043	-0.190264	0.020904
Nov-08	-0.012138	0.020901	-0.060884	0.022322
Dec-08	-0.027665	0.017118	0.026536	0.019463

Panel D

	$\ln MV_{i,t-1}$	Std deviation	Constant	Std devation
Jan-93	-0.021477	0.007153	-0.032307	0.010119
Feb-93	-0.006506	0.004891	0.05491	0.025845
Mar-93	-0.007174	0.005219	0.06787	0.02718
Apr-93	-0.010838	0.005647	0.09325	0.030093
May-93	-0.016581	0.008221	0.116658	0.043016

Jun-93	-0.010219	0.004397	0.087089	0.023674
Jul-93	0.003922	0.004158	0.006248	0.021285
Aug-93	-0.008049	0.003781	0.11552	0.019185
Sep-93	-0.000791	0.004518	-0.010866	0.022917
Oct-93	-0.002986	0.004865	0.051081	0.02513
Nov-93	0.01293	0.003706	-0.089808	0.019122
Dec-93	-0.005466	0.004626	0.103457	0.024177
Jan-94	-0.022306	0.005443	0.222825	0.028493
Feb-94	-0.007648	0.004502	0.025378	0.023742
Mar-94	0.002592	0.003268	-0.075862	0.01733
Apr-94	-0.00282	0.003978	0.030288	0.021258
May-94	-0.010142	0.003891	0.015692	0.020835
Jun-94	0.010132	0.003399	-0.096002	0.017998
Jul-94	0.011298	0.003491	-0.008352	0.018884
Aug-94	0.007434	0.003681	-0.00251	0.020132
Sep-94	-0.005423	0.003224	-0.039163	0.017603
Oct-94	0.010244	0.003091	-0.071534	0.016981
Nov-94	0.005086	0.003485	-0.037775	0.019096
Dec-94	0.004653	0.002862	-0.031782	0.015893
Jan-95	-0.002914	0.002912	-0.010727	0.01617
Feb-95	0.010198	0.003914	-0.071172	0.021614
Mar-95	0.007287	0.00428	-0.016826	0.023339
Apr-95	0.001968	0.00638	0.016904	0.034991
May-95	-0.007232	0.005987	0.095428	0.032511
Jun-95	0.002126	0.003306	-0.034702	0.017819
Jul-95	0.006074	0.004491	0.032315	0.024423
Aug-95	-0.014776	0.006602	0.121522	0.036145
Sep-95	0.002541	0.004675	0.000811	0.02522
Oct-95	0.001776	0.004126	-0.03153	0.022242
Nov-95	-0.0029	0.00554	0.033694	0.029818
Dec-95	0.003882	0.003333	-0.012729	0.017929
Jan-96	0.006098	0.00433	-0.003291	0.02224
Feb-96	0.000511	0.003707	0.008691	0.018964
Mar-96	-0.004421	0.004579	0.046235	0.023363
Apr-96	-0.004232	0.005519	0.086139	0.028187
May-96	-0.014762	0.004408	0.094163	0.02277
Jun-96	0.003747	0.002948	-0.042362	0.015174
Jul-96	0.007663	0.003865	-0.070363	0.020079
Aug-96	0.003502	0.00353	0.016805	0.018421
Sep-96	0.001233	0.003432	-0.000153	0.017869
Oct-96	-0.000421	0.003908	-0.000609	0.02022
Nov-96	0.006508	0.003732	-0.037316	0.019367
Dec-96	0.011432	0.003942	-0.050991	0.020491

Jan-97	-0.010234	0.005584	0.104603	0.029352
Feb-97	-0.007352	0.005552	0.055082	0.029402
Mar-97	0.007604	0.004718	-0.053119	0.025061
Apr-97	-0.003791	0.003967	0.018315	0.021221
May-97	0.001864	0.004766	-0.014664	0.025628
Jun-97	0.006747	0.004063	-0.055931	0.021692
Jul-97	0.014087	0.004141	-0.079461	0.021984
Aug-97	0.009565	0.004417	-0.008693	0.023676
Sep-97	0.008992	0.00389	-0.006761	0.020884
Oct-97	-0.007668	0.005597	0.041575	0.03007
Nov-97	0.003325	0.004877	-0.010248	0.026126
Dec-97	0.006316	0.004069	-0.025812	0.021888
Jan-98	0.007118	0.004778	-0.01584	0.024513
Feb-98	0.013779	0.004621	-0.031532	0.023805
Mar-98	-0.006388	0.006093	0.091719	0.031088
Apr-98	0.003441	0.003932	-0.014176	0.02011
May-98	-0.00313	0.004957	0.054884	0.025352
Jun-98	-0.005952	0.00795	-0.01084	0.040635
Jul-98	0.00513	0.004944	-0.07199	0.025512
Aug-98	-0.005474	0.004801	-0.08456	0.024813
Sep-98	0.007708	0.006116	-0.089756	0.031834
Oct-98	0.019092	0.005065	-0.086033	0.026266
Nov-98	0.001557	0.005221	0.014608	0.027229
Dec-98	0.002679	0.005208	-0.005145	0.027267
Jan-99	0.009625	0.006151	-0.010208	0.031338
Feb-99	0.0007	0.005245	0.047064	0.027024
Mar-99	-0.00423	0.006098	0.068523	0.031521
Apr-99	-0.021028	0.008343	0.207475	0.04318
May-99	-0.008915	0.004705	0.036409	0.024541
Jun-99	0.007945	0.004316	-0.011588	0.022329
Jul-99	-0.013136	0.006463	0.094272	0.033189
Aug-99	0.00135	0.004553	0.031446	0.022896
Sep-99	-0.007246	0.004392	-0.00274	0.02185
Oct-99	-0.008095	0.006238	0.055492	0.031109
Nov-99	-0.039986	0.016587	0.32563	0.083736
Dec-99	-0.005094	0.007874	0.07244	0.039826
Jan-00	-0.033572	0.007095	0.15814	0.035784
Feb-00	-0.011	0.007501	0.072022	0.038179
Mar-00	0.015986	0.005709	-0.065675	0.029348
Apr-00	0.01955	0.005314	-0.13448	0.027594
May-00	0.003433	0.004732	-0.037166	0.024423
Jun-00	0.004811	0.005365	0.026826	0.027852
Jul-00	2.67E-05	0.005111	0.021661	0.026547

Aug-00	0.000877	0.004701	0.039316	0.024516
Sep-00	-0.006623	0.00414	-0.005582	0.021385
Oct-00	0.01551	0.004358	-0.097531	0.022498
Nov-00	0.00818	0.006166	-0.069355	0.03241
Dec-00	-0.000761	0.005083	0.025432	0.026908
Jan-01	0.002621	0.006083	0.032995	0.032148
Feb-01	-0.010261	0.004685	0.010756	0.024807
Mar-01	-0.007821	0.005773	-0.058113	0.030572
Apr-01	0.009883	0.004431	-0.006076	0.02308
May-01	-0.004684	0.004216	0.046323	0.021798
Jun-01	0.004043	0.00579	-0.084832	0.030259
Jul-01	6.91E-05	0.00514	-0.064191	0.026847
Aug-01	-0.006033	0.004646	0.020449	0.024448
Sep-01	0.001979	0.005701	-0.208767	0.029877
Oct-01	0.008431	0.007478	0.042923	0.039001
Nov-01	0.002198	0.007488	0.099482	0.039024
Dec-01	-0.002874	0.004867	0.011563	0.025444
Jan-02	-0.006824	0.004376	0.014063	0.022083
Feb-02	-0.000887	0.004738	-0.02891	0.023726
Mar-02	0.005776	0.005974	0.020767	0.029106
Apr-02	-0.000277	0.005396	0.008929	0.026592
May-02	-0.003898	0.004492	0.013083	0.022166
Jun-02	-0.003806	0.003527	-0.073476	0.017267
Jul-02	-0.007661	0.00398	-0.06624	0.019351
Aug-02	0.01189	0.005066	-0.072726	0.0245
Sep-02	-0.006839	0.005563	-0.096464	0.025637
Oct-02	0.002401	0.006586	0.034355	0.031121
Nov-02	-0.010852	0.005726	0.121052	0.027653
Dec-02	-0.005941	0.005125	-0.012101	0.02482
Jan-03	-0.003556	0.004373	-0.029013	0.021155
Feb-03	0.009009	0.003862	-0.051362	0.018645
Mar-03	0.00366	0.002872	-0.036234	0.020678
Apr-03	0.007848	0.005496	0.077517	0.027077
May-03	-0.007842	0.005545	0.150847	0.027273
Jun-03	-0.015823	0.005956	0.145631	0.028761
Jul-03	0.006541	0.004978	0.037828	0.023751
Aug-03	-0.02016	0.005015	0.187611	0.023965
Sep-03	-0.005016	0.004842	0.013975	0.022413
Oct-03	-0.010727	0.004978	0.106201	0.023145
Nov-03	0.003526	0.003556	-0.026339	0.016624
Dec-03	0.001108	0.003429	0.016547	0.015908
Jan-04	-0.021276	0.006682	0.163956	0.030857
Feb-04	-0.001548	0.004656	0.052874	0.021449

Mar-04	0.015968	0.003233	-0.087407	0.014829
Apr-04	-0.001465	0.003227	0.017549	0.015027
May-04	0.001964	0.002455	-0.037064	0.011655
Jun-04	-0.00096	0.004221	0.040483	0.020207
Jul-04	0.005693	0.003258	-0.062546	0.015795
Aug-04	0.003398	0.003021	-0.015098	0.014844
Sep-04	0.000791	0.003401	0.022715	0.016651
Oct-04	0.000592	0.003083	0.018097	0.01523
Nov-04	0.007291	0.004468	-0.011744	0.022178
Dec-04	0.013158	0.003533	-0.033935	0.017548
Jan-05	-0.003765	0.003716	0.059016	0.018634
Feb-05	-0.001581	0.004221	0.0274	0.021258
Mar-05	0.008411	0.003043	-0.064222	0.01538
Apr-05	0.003973	0.004169	-0.060067	0.021159
May-05	0.00981	0.003273	-0.025014	0.016505
Jun-05	0.004384	0.003305	0.008069	0.016876
Jul-05	0.004844	0.003835	0.00016	0.019518
Aug-05	-0.001468	0.007693	0.03739	0.038892
Sep-05	-0.000923	0.004919	0.010148	0.024926
Oct-05	0.00665	0.003376	-0.083644	0.017221
Nov-05	0.006003	0.003947	0.017978	0.020214
Dec-05	0.017542	0.003031	-0.058135	0.015601
Jan-06	-0.010528	0.004862	0.078435	0.025293
Feb-06	-0.008406	0.006199	0.089003	0.032406
Mar-06	-0.004665	0.005856	0.066157	0.030455
Apr-06	-0.00657	0.003564	0.047474	0.018462
May-06	-0.001507	0.00358	-0.030971	0.018627
Jun-06	0.012823	0.003673	-0.062025	0.019299
Jul-06	0.000975	0.003283	-0.006009	0.017324
Aug-06	0.003217	0.00341	-0.002355	0.017967
Sep-06	0.002699	0.003168	0.022565	0.016708
Oct-06	0.004645	0.003222	0.001996	0.016955
Nov-06	0.003454	0.003014	0.003057	0.016047
Dec-06	-0.008815	0.005447	0.105934	0.029184
Jan-07	-0.002116	0.00422	0.029042	0.022524
Feb-07	-0.0015	0.003103	0.0126	0.016734
Mar-07	9.75E-05	0.003857	0.030451	0.020991
Apr-07	-0.007638	0.005846	0.071633	0.031364
May-07	-0.001785	0.003585	0.041434	0.019086
Jun-07	-0.013448	0.004615	0.054438	0.024668
Jul-07	-0.018142	0.008511	0.093344	0.045429
Aug-07	0.008472	0.002459	-0.076784	0.013229
Sep-07	7.45E-05	0.00327	-0.032441	0.017743

Oct-07	0.00437	0.003738	0.005504	0.020349
Nov-07	-0.000568	0.003798	-0.081233	0.020813
Dec-07	0.004419	0.003769	-0.041654	0.020835
Jan-08	0.00466	0.003592	-0.097223	0.020058
Feb-08	-0.014501	0.005981	0.102597	0.033432
Mar-08	0.005996	0.004519	-0.059025	0.025619
Apr-08	0.00326	0.004577	0.006057	0.026035
May-08	-0.00528	0.004321	0.018419	0.024636
Jun-08	-0.003817	0.004897	-0.0612	0.027847
Jul-08	0.018459	0.005884	-0.151138	0.033467
Aug-08	0.004879	0.004691	0.019989	0.02665
Sep-08	0.004284	0.005861	-0.17849	0.033196
Oct-08	-0.004846	0.00616	-0.145148	0.03508
Nov-08	0.00472	0.006825	-0.076073	0.038088
Dec-08	0.020661	0.007294	-0.070922	0.034879

Table A.IV

Multi-variate cross-sectional regressions from January 1993 to December 2008

Panel A corresponds with the regression on the relative bid-ask spread, the book-to-market ratio and the market value variables. Panel B corresponds with the regression on the turnover rate, the book-to-market ratio and the market value variables. Panel C corresponds with the regression on the relative bid-ask spread, the turnover rate, the book-to-market ratio and the market value variables.

Panel A

	$BA_{i,t-1\to t-12}$	Std deviation	$\left[\ln \frac{B}{M}\right]_{i,t-1}$	Std deviation	$\ln MV_{i,t-1}$	Std deviation	Constant	Std deviation
Jan-93	0.614745	0.696146	0.049039	0.066354	-0.007017	0.021257	0.141315	0.047691
Feb-93	-0.353287	0.33197	0.035215	0.01314	-0.008174	0.007286	0.093479	0.049104
Mar-93	0.244289	0.331179	0.055632	0.013498	0.004287	0.007571	0.019072	0.050204
Apr-93	0.279363	0.38809	0.005791	0.015871	-0.005363	0.008783	0.055661	0.059058
May-93	1.050137	0.575057	0.027959	0.021934	0.00559	0.013008	-0.029103	0.086272
Jun-93	0.08185	0.312873	0.014658	0.011857	-0.007249	0.006758	0.075602	0.046021
Jul-93	-0.462313	0.297308	0.029953	0.01084	0.000811	0.006618	0.048836	0.043078
Aug-93	-0.153279	0.272049	0.003518	0.009762	-0.010049	0.006186	0.132535	0.039582
Sep-93	0.226528	0.321051	0.008523	0.011899	0.004673	0.007443	-0.045062	0.047449
Oct-93	0.1729	0.346726	0.009847	0.013156	0.001571	0.007859	0.023932	0.050744
Nov-93	-0.037667	0.268968	0.002027	0.010137	0.012662	0.006095	-0.086192	0.039373
Dec-93	0.634288	0.327496	0.002091	0.01233	0.005646	0.007448	0.020991	0.048526
Jan-94	-0.168892	0.466493	0.008206	0.014869	-0.023313	0.009079	0.236846	0.057702
Feb-94	-0.052424	0.389182	-0.008066	0.012396	-0.009722	0.007532	0.034297	0.048383
Mar-94	0.396802	0.273242	0.001967	0.008889	0.008682	0.005302	-0.119341	0.034337
Apr-94	-0.394671	0.32921	-0.010641	0.010712	-0.010104	0.006414	0.075852	0.041896
May-94	0.176066	0.288607	0.007248	0.010431	-0.006581	0.006032	-0.005134	0.038795
Jun-94	-0.089377	0.248258	-0.00785	0.009193	0.007785	0.005321	-0.084965	0.03393
Jul-94	-0.112871	0.250053	0.022926	0.00969	0.012028	0.005233	0.004835	0.034036
Aug-94	-0.077574	0.287666	0.00015	0.010624	0.006321	0.005673	0.006132	0.037928
Sep-94	-0.37908	0.254075	0.002141	0.009123	-0.010771	0.004966	0.003394	0.033458
Oct-94	0.257054	0.240227	0.007669	0.008646	0.014772	0.004733	-0.099421	0.031887
Nov-94	0.049128	0.274198	0.000881	0.009775	0.005893	0.005383	-0.043182	0.036051
Dec-94	-0.276136	0.223615	0.005446	0.008173	0.00116	0.004386	0.000336	0.029938
Jan-95	0.213228	0.217225	-0.001247	0.00707	-0.00026	0.004005	-0.032156	0.027361
Feb-95	-0.492609	0.290093	0.016265	0.009419	0.00447	0.005347	-0.012247	0.036572
Mar-95	-0.599746	0.316832	-0.0054	0.010438	-0.000582	0.005849	0.037724	0.039481
Apr-95	-0.242852	0.469923	-0.003969	0.015375	-0.001233	0.008664	0.03768	0.059343
May-95	0.330622	0.444852	0.00098	0.014846	-0.002974	0.008222	0.064192	0.055989
Jun-95	-0.236746	0.247526	-0.001356	0.00888	-0.000946	0.004537	-0.01269	0.030743
Jul-95	-0.383241	0.342619	0.001904	0.012155	0.001338	0.006173	0.069783	0.042179
Aug-95	0.62432	0.506074	-0.041212	0.017719	-0.009626	0.008996	0.04504	0.062168

Sep-95	0.161644	0.336836	-0.017932	0.012506	0.003599	0.006398	-0.021799	0.043106
Oct-95	0.368075	0.327415	-0.003228	0.010882	0.006113	0.005746	-0.066994	0.038638
Nov-95	0.783568	0.435595	0.01584	0.014479	0.008386	0.007621	-0.037937	0.050934
Dec-95	-0.191669	0.252453	0.008879	0.008998	0.002234	0.004525	0.007224	0.029975
Jan-96	-0.390194	0.260697	-0.013087	0.009874	-0.000856	0.005833	0.036859	0.036195
Feb-96	-0.100362	0.228559	0.003996	0.008663	-0.00063	0.005081	0.020083	0.031418
Mar-96	-0.119066	0.260981	0.017199	0.010054	-0.005483	0.006361	0.066586	0.038821
Apr-96	-1.05384	0.312391	0.009166	0.008204	-0.022079	0.007481	0.21841	0.047212
May-96	-0.131834	0.254949	0.00364	0.006706	-0.017156	0.006147	0.113616	0.039137
Jun-96	-0.134306	0.171754	0.001462	0.004448	0.001413	0.004156	-0.024886	0.026368
Jul-96	0.277532	0.228429	0.005422	0.005803	0.012019	0.005456	-0.097735	0.035016
Aug-96	-0.297952	0.209573	0.005828	0.005309	-0.001857	0.005032	0.059206	0.032534
Sep-96	0.025734	0.207143	0.002391	0.005065	0.001547	0.004954	-0.000644	0.031945
Oct-96	-0.015087	0.233775	-0.005419	0.005672	-0.000406	0.005613	-0.004616	0.035958
Nov-96	0.116833	0.218585	-0.001951	0.005416	0.00858	0.00528	-0.053563	0.033847
Dec-96	-0.017939	0.228762	0.00854	0.005677	0.010636	0.005531	-0.039047	0.035494
Jan-97	-0.148151	0.312822	0.019423	0.007834	-0.014064	0.007621	0.144774	0.048911
Feb-97	0.270766	0.358103	-0.005515	0.008054	-0.002874	0.007924	0.018488	0.052324
Mar-97	0.227865	0.306179	0.000929	0.006869	0.01111	0.006822	-0.078195	0.045273
Apr-97	0.008247	0.268378	0.011705	0.005547	-0.004411	0.005924	0.03164	0.039967
May-97	-0.037602	0.306211	0.012808	0.006482	-9.66E-05	0.007059	0.008547	0.047462
Jun-97	-0.632176	0.258199	-0.003757	0.005526	-0.003157	0.005924	0.013895	0.039595
Jul-97	-0.037912	0.272219	0.004867	0.005897	0.012977	0.006156	-0.068366	0.040962
Aug-97	-0.449463	0.291843	0.006834	0.006047	0.001567	0.006614	0.054491	0.044436
Sep-97	-0.116444	0.264094	-0.000109	0.005417	0.007091	0.005915	0.007046	0.039899
Oct-97	-1.15491	0.376887	0.004933	0.007551	-0.027	0.00836	0.186312	0.056516
Nov-97	0.433912	0.332418	0.011986	0.006697	0.009806	0.007245	-0.048313	0.048895
Dec-97	0.048774	0.280647	0.006429	0.0057	0.006843	0.006096	-0.024472	0.041283
Jan-98	-0.264509	0.23123	0.003202	0.006797	0.002615	0.006114	0.020435	0.038728
Feb-98	-0.02257	0.21514	-0.024664	0.006178	0.014849	0.005687	-0.060824	0.036127
Mar-98	0.249747	0.237272	-0.004912	0.008749	-0.001272	0.007738	0.050749	0.047805
Apr-98	0.354683	0.155202	-0.010102	0.005841	0.010318	0.004876	-0.072442	0.030397
May-98	-0.372912	0.207748	0.008273	0.007612	-0.010121	0.006253	0.112125	0.039294
Jun-98	0.020144	0.340669	-0.015664	0.011456	-0.005982	0.009852	-0.024477	0.060382
Jul-98	0.709235	0.2091	-0.025492	0.007288	0.017874	0.005991	-0.184596	0.037757
Aug-98	-0.357619	0.21518	-0.000328	0.007548	-0.011799	0.006134	-0.038997	0.039017
Sep-98	-0.145534	0.285808	0.002458	0.009921	0.005159	0.007937	-0.068987	0.051095
Oct-98	-0.190624	0.231164	-0.00373	0.008211	0.015815	0.006445	-0.065428	0.041244
Nov-98	0.086653	0.233057	-0.001018	0.011812	0.003027	0.00666	0.002851	0.041959
Dec-98	0.271555	0.225071	-0.011458	0.011665	0.006447	0.00648	-0.045157	0.040335
Jan-99	-0.388824	0.224957	-0.003282	0.012238	0.002435	0.007487	0.039375	0.042722
Feb-99	-0.211597	0.196679	-0.006874	0.010344	-0.003958	0.006523	0.073315	0.037247
Mar-99	-0.185674	0.225268	0.017145	0.012087	-0.005542	0.007551	0.099662	0.043866

Apr-99	1.126369	0.303104	0.004123	0.016053	0.000469	0.010111	0.053802	0.059112
May-99	0.182915	0.173041	0.003523	0.009265	-0.005148	0.00583	0.012578	0.034112
Jun-99	-0.104078	0.15957	0.004647	0.008483	0.00663	0.005358	0.003843	0.031129
Jul-99	0.958734	0.231078	-0.008831	0.012313	0.002843	0.00771	-0.035099	0.044225
Aug-99	-0.198443	0.169167	0.005	0.008985	-0.00156	0.005666	0.057919	0.031962
Sep-99	-0.04064	0.165277	-0.005837	0.008991	-0.008752	0.005496	0.002497	0.030775
Oct-99	-0.151656	0.23946	-0.015877	0.013066	-0.013118	0.007827	0.076094	0.04378
Nov-99	-0.180072	0.641169	-0.008398	0.035356	-0.044577	0.02114	0.350183	0.119834
Dec-99	-0.020419	0.304226	-0.019437	0.01662	-0.008534	0.010013	0.077306	0.056769
Jan-00	0.025797	0.341818	-0.016096	0.017123	-0.035396	0.009696	0.156208	0.057906
Feb-00	-0.29487	0.35157	-0.070276	0.017474	-0.026103	0.009899	0.114503	0.060257
Mar-00	0.378116	0.280729	0.02237	0.014067	0.026166	0.00782	-0.118157	0.048167
Apr-00	0.347407	0.258661	0.017506	0.013797	0.028338	0.007253	-0.181608	0.045215
May-00	-0.239387	0.227363	0.031968	0.012208	0.003223	0.006338	-0.004053	0.039524
Jun-00	-0.728676	0.254088	0.001304	0.014014	-0.008481	0.007121	0.126923	0.044397
Jul-00	0.496492	0.247079	-0.005928	0.013512	0.008521	0.006906	-0.047492	0.043357
Aug-00	-0.47619	0.220439	-0.019638	0.012085	-0.010584	0.006225	0.103951	0.038965
Sep-00	0.190597	0.19664	-0.01019	0.010721	-0.004521	0.005617	-0.031862	0.034595
Oct-00	0.057893	0.204076	0.018608	0.010701	0.019072	0.005937	-0.104769	0.03645
Nov-00	0.062268	0.27263	0.063611	0.013713	0.01833	0.007973	-0.072906	0.049157
Dec-00	-0.094275	0.234319	-0.004688	0.011434	-0.003222	0.00695	0.038342	0.042346
Jan-01	-0.211324	0.35398	0.000929	0.008457	0.010123	0.013196	0.060042	0.0545
Feb-01	0.032931	0.248727	0.053105	0.008783	-0.000684	0.006031	0.006865	0.03855
Mar-01	-0.146432	0.315475	0.040789	0.011653	-0.003082	0.007681	-0.039824	0.048549
Apr-01	0.042443	0.260029	0.00548	0.009855	0.011285	0.006127	-0.011001	0.039297
May-01	-0.288877	0.250055	0.008249	0.009831	-0.008051	0.005868	0.08258	0.037924
Jun-01	-0.621508	0.335744	0.035602	0.012842	-0.001116	0.007927	-0.001892	0.051885
Jul-01	0.393621	0.290131	0.055636	0.011108	0.014064	0.006812	-0.110062	0.04469
Aug-01	-0.185842	0.280227	0.02624	0.01039	-0.005487	0.006524	0.048364	0.043613
Sep-01	0.478733	0.332171	0.045328	0.012876	0.015556	0.007798	-0.264161	0.051691
Oct-01	0.30532	0.449716	-0.05358	0.018095	0.005756	0.010461	0.003105	0.068701
Nov-01	0.593296	0.462968	-0.035235	0.019556	0.007121	0.01054	0.023651	0.069973
Dec-01	-0.178533	0.300797	-0.008185	0.012785	-0.00682	0.006949	0.034	0.046009
Jan-02	-0.745285	0.239549	0.023858	0.009156	-0.014596	0.005965	0.106065	0.036807
Feb-02	-0.505202	0.270567	0.017354	0.010387	-0.006271	0.006697	0.033888	0.041556
Mar-02	-0.492482	0.338308	0.006201	0.013337	-0.001632	0.008458	0.083311	0.051935
Apr-02	-0.232544	0.308254	0.007089	0.012384	-0.003395	0.007815	0.040129	0.04783
May-02	-0.197148	0.260173	0.009121	0.010496	-0.006262	0.006602	0.040531	0.040459
Jun-02	-0.053361	0.204792	0.018971	0.008174	-0.002481	0.005141	-0.064704	0.031344
Jul-02	-0.617214	0.23316	0.002474	0.009338	-0.017765	0.00575	0.012395	0.035073
Aug-02	0.167947	0.301645	0.007295	0.012249	0.015506	0.007449	-0.093325	0.045079
Sep-02	0.058012	0.324619	-0.003285	0.013739	-0.006182	0.008184	-0.103455	0.048134
Oct-02	0.564633	0.403204	-0.009463	0.016224	0.01067	0.009876	-0.034649	0.059004

Nov-02	0.811358	0.343925	0.026333	0.014227	0.005451	0.008429	0.020652	0.050783
Dec-02	-0.399492	0.315093	0.005793	0.012826	-0.011809	0.007699	0.037791	0.046506
Jan-03	-0.458385	0.166419	0.006556	0.011329	-0.013373	0.006096	0.050527	0.03537
Feb-03	-0.173109	0.152736	-0.00134	0.010078	0.004755	0.005563	-0.021165	0.032537
Mar-03	-0.037269	0.083019	-0.004131	0.006708	0.002912	0.003161	-0.008775	0.036234
Apr-03	0.717877	0.231548	-0.004464	0.01583	0.023925	0.007961	-0.046278	0.04794
May-03	0.251941	0.24155	0.00133	0.017118	-0.001859	0.008281	0.107626	0.049636
Jun-03	1.066702	0.249138	0.023384	0.017451	0.011844	0.008534	-0.03704	0.050692
Jul-03	-0.651649	0.213201	-0.015176	0.015141	-0.010673	0.007309	0.14998	0.042882
Aug-03	0.470157	0.225265	0.013751	0.015538	-0.007672	0.007521	0.107857	0.044129
Sep-03	0.117396	0.219709	-0.021857	0.014892	-0.005128	0.007409	0.002069	0.042785
Oct-03	0.14868	0.226291	0.029101	0.015258	-0.003615	0.00758	0.073603	0.044006
Nov-03	-0.063468	0.162294	0.006267	0.011146	0.002799	0.005443	-0.017409	0.031733
Dec-03	0.310522	0.152897	-0.011352	0.010227	0.006972	0.005141	-0.030895	0.029747
Jan-04	0.657568	0.275841	-0.043113	0.018877	-0.010928	0.009329	0.072251	0.052656
Feb-04	0.086646	0.19488	-0.044548	0.013186	-0.004807	0.006581	0.053208	0.037197
Mar-04	-0.27063	0.139422	9.35E-05	0.009125	0.009786	0.00469	-0.04544	0.026463
Apr-04	0.057229	0.133648	0.014016	0.008846	0.001485	0.004648	0.005187	0.026362
May-04	-0.154495	0.099418	0.011144	0.006818	-0.000452	0.003471	-0.013183	0.01985
Jun-04	0.154118	0.169009	-0.004959	0.011689	0.002186	0.005961	0.015163	0.034259
Jul-04	-0.458807	0.124096	0.011315	0.008516	-0.004075	0.004389	0.014432	0.025557
Aug-04	0.082545	0.117109	0.00037	0.008254	0.00538	0.00418	-0.028927	0.024695
Sep-04	0.083945	0.131448	0.001312	0.009195	0.00288	0.004721	0.008845	0.02762
Oct-04	-0.072155	0.115745	0.000612	0.008295	-0.001088	0.004213	0.030587	0.02481
Nov-04	0.282556	0.164404	0.001043	0.012006	0.014089	0.006024	-0.059833	0.035599
Dec-04	-0.392109	0.128749	0.002556	0.009326	0.003946	0.004719	0.034367	0.027833
Jan-05	-0.040217	0.140701	0.014637	0.008812	-0.003954	0.004426	0.071947	0.025939
Feb-05	0.516134	0.155581	0.012407	0.009431	0.00769	0.004913	-0.031157	0.028993
Mar-05	-0.191803	0.116866	0.002776	0.007129	0.005276	0.003646	-0.038657	0.021494
Apr-05	-0.179499	0.156594	0.018266	0.010314	0.001651	0.004935	-0.027733	0.029169
May-05	0.177174	0.12227	-0.014335	0.008166	0.012184	0.003859	-0.054086	0.022599
Jun-05	-0.318051	0.121273	0.016468	0.008412	-0.000263	0.003836	0.056401	0.022767
Jul-05	-0.226605	0.143884	0.003762	0.009579	0.001141	0.004548	0.030551	0.02696
Aug-05	-0.065875	0.290809	-0.015465	0.019551	-0.003105	0.00922	0.037428	0.054741
Sep-05	0.427082	0.181437	0.020898	0.012186	0.007177	0.005761	-0.03281	0.034223
Oct-05	-0.089277	0.122896	0.02514	0.008205	0.005822	0.003924	-0.057174	0.023584
Nov-05	-0.118206	0.147971	-0.004381	0.009771	0.00387	0.004701	0.030148	0.028403
Dec-05	-0.157485	0.114926	-0.003934	0.007443	0.014696	0.003615	-0.040457	0.021874
Jan-06	1.029375	0.212124	0.038774	0.012413	0.008604	0.005743	-0.034198	0.036468
Feb-06	0.039741	0.285996	0.059481	0.016965	-0.005196	0.007752	0.119053	0.049887
Mar-06	0.097784	0.276282	-0.054697	0.016435	-0.006297	0.007391	0.027807	0.047109
Apr-06	0.007675	0.173397	-0.007399	0.010439	-0.007018	0.004639	0.044108	0.029002
May-06	-0.336504	0.174096	0.015571	0.010334	-0.005749	0.004626	0.016814	0.028938

Jun-06	-0.217081	0.182075	0.014518	0.010042	0.010598	0.004809	-0.029392	0.03034
Jul-06	0.12854	0.164721	-0.01035	0.009573	0.001897	0.004365	-0.02463	0.027434
Aug-06	-0.01516	0.172091	-0.001302	0.009977	0.002817	0.00457	-0.000667	0.028725
Sep-06	-0.206922	0.152352	0.031543	0.009152	0.003216	0.004084	0.053656	0.025338
Oct-06	-0.254713	0.158417	0.02031	0.010159	0.003086	0.004236	0.036299	0.026004
Nov-06	-0.414549	0.148834	-0.004526	0.009491	-0.00375	0.003975	0.055182	0.024638
Dec-06	1.431157	0.245952	0.009205	0.015603	0.015022	0.00662	-0.075234	0.041074
Jan-07	-0.017476	0.184876	-0.015173	0.012528	-0.004414	0.005825	0.029546	0.034412
Feb-07	-0.316005	0.133344	0.012328	0.009201	-0.005656	0.004139	0.058133	0.024613
Mar-07	0.544685	0.162209	-0.004895	0.01125	0.009567	0.005052	-0.047233	0.030482
Apr-07	0.619129	0.227484	-0.027246	0.018225	0.002421	0.007781	-0.030963	0.045882
May-07	-0.140788	0.145108	0.004777	0.011826	-0.004243	0.004939	0.064194	0.028903
Jun-07	0.665301	0.181631	-0.020282	0.016433	-0.002047	0.006113	-0.049012	0.035562
Jul-07	1.566755	0.328469	-0.020813	0.030023	0.011179	0.011058	-0.143044	0.064039
Aug-07	0.074584	0.101948	0.00688	0.009327	0.010698	0.003465	-0.086801	0.020028
Sep-07	-0.21338	0.135834	0.00296	0.01252	-0.00395	0.004614	0.000415	0.026917
Oct-07	0.098665	0.155719	-0.022839	0.014401	0.004148	0.005254	-0.01539	0.030971
Nov-07	0.258648	0.159643	-0.001432	0.01441	0.004628	0.005366	-0.121674	0.03207
Dec-07	0.561121	0.151504	0.020991	0.013331	0.01811	0.005099	-0.122441	0.030673
Jan-08	-0.457258	0.204181	0.008931	0.013122	-0.001877	0.00515	-0.038078	0.031847
Feb-08	1.17778	0.32295	-0.04574	0.020672	0.000502	0.008133	-0.058987	0.050754
Mar-08	-0.407669	0.306425	0.016379	0.01648	0.001532	0.006759	-0.006378	0.043311
Apr-08	-0.164948	0.305005	-0.010895	0.015201	-0.000135	0.006744	0.020735	0.043234
May-08	-0.261125	0.28174	-0.042212	0.013868	-0.012918	0.006217	0.031095	0.039924
Jun-08	-0.574409	0.321422	0.001008	0.015304	-0.012226	0.007122	0.00557	0.045576
Jul-08	-0.577025	0.379604	0.016613	0.017167	0.011346	0.008431	-0.077145	0.053681
Aug-08	0.108975	0.302683	0.032544	0.013797	0.009283	0.006714	0.020625	0.042543
Sep-08	-0.960971	0.368995	0.026678	0.016814	-0.007511	0.008199	-0.059405	0.051845
Oct-08	0.876225	0.407274	-0.029814	0.018971	0.004053	0.008758	-0.247662	0.056241
Nov-08	-1.180956	0.446858	-0.0158	0.021928	-0.013516	0.009668	0.049637	0.060903
Dec-08	-0.280722	0.239149	-0.007033	0.019382	0.018813	0.008451	-0.058908	0.057739

Panel B

	$TO_{i,t-1\to t-12}$	Std deviation	$\left[\ln \frac{B}{M}\right]_{i,t-1}$	Std deviation	$\ln MV_{i,t-1}$	Std deviation	Constant	Std deviation
Jan-93	0.283258	0.196256	0.04971	0.066079	-0.005896	0.021188	0.246893	0.054702
Feb-93	0.132052	0.094652	0.037027	0.013241	-0.002927	0.004999	0.043601	0.025449
Mar-93	0.070699	0.096888	0.059074	0.013576	0.000119	0.005135	0.047186	0.026032
Apr-93	0.066597	0.113549	0.008932	0.016096	-0.010045	0.005997	0.088755	0.030948
May-93	-0.030477	0.164913	0.031578	0.022613	-0.012206	0.008734	0.109334	0.044207
Jun-93	0.036065	0.087573	0.015931	0.012054	-0.008657	0.004606	0.08461	0.02393
Jul-93	0.044957	0.083656	0.029307	0.011139	0.00849	0.004435	-0.011935	0.022202
Aug-93	0.050641	0.078416	0.004691	0.009971	-0.00751	0.004163	0.11037	0.020824

Sep-93	0.05501	0.091305	0.010306	0.012133	0.000733	0.005012	-0.019393	0.024701
Oct-93	0.174549	0.101825	0.016121	0.013457	-0.001339	0.005307	0.035579	0.026589
Nov-93	0.114144	0.078976	0.006547	0.010511	0.013266	0.004128	-0.097276	0.020433
Dec-93	-0.100481	0.097833	-0.000501	0.012998	-0.004851	0.005157	0.107137	0.025594
Jan-94	0.138861	0.13846	0.009956	0.014848	-0.021615	0.006055	0.213158	0.029923
Feb-94	-0.019393	0.115627	-0.008255	0.012463	-0.008841	0.005013	0.029373	0.024791
Mar-94	0.126017	0.072616	0.004483	0.008954	0.002385	0.003502	-0.082253	0.017717
Apr-94	0.063353	0.087427	-0.009891	0.010892	-0.004574	0.00425	0.029758	0.021772
May-94	0.008355	0.084947	0.007189	0.010591	-0.009306	0.004144	0.014421	0.021318
Jun-94	0.10269	0.072202	-0.005388	0.009256	0.008641	0.003585	-0.099031	0.018152
Jul-94	0.004121	0.074149	0.023128	0.009852	0.013729	0.003606	-0.008194	0.018814
Aug-94	0.013068	0.079574	0.000395	0.010813	0.007382	0.003885	-0.002975	0.020526
Sep-94	0.061997	0.069407	0.002661	0.009304	-0.005584	0.003386	-0.041355	0.017898
Oct-94	-0.038167	0.0662	0.007145	0.008812	0.011225	0.003234	-0.069193	0.017235
Nov-94	0.068107	0.075356	0.002572	0.009903	0.004887	0.003673	-0.040272	0.019406
Dec-94	-0.032773	0.061374	0.004112	0.008318	0.00528	0.003005	-0.029748	0.016203
Jan-95	0.107776	0.071179	0.001118	0.007057	-0.003757	0.002974	-0.012093	0.016775
Feb-95	0.016979	0.099173	0.014544	0.009506	0.010577	0.004001	-0.06169	0.022529
Mar-95	-0.061709	0.109191	-0.008608	0.010563	0.007481	0.0044	-0.020964	0.024313
Apr-95	0.319091	0.156943	-0.001211	0.014981	-0.00081	0.006476	0.01086	0.035896
May-95	-0.007003	0.150745	0.003246	0.014689	-0.007067	0.006173	0.097444	0.033849
Jun-95	0.131976	0.08306	-0.001178	0.008696	0.000895	0.003387	-0.037241	0.018253
Jul-95	0.159119	0.114634	0.001195	0.011919	0.004735	0.004633	0.030386	0.024942
Aug-95	0.097591	0.168504	-0.034047	0.017421	-0.017909	0.006768	0.106473	0.036487
Sep-95	0.227113	0.119275	-0.012787	0.012128	-0.00032	0.004775	-0.006941	0.0253
Oct-95	0.202313	0.107602	0.00286	0.010642	0.000198	0.004275	-0.033953	0.022264
Nov-95	0.369867	0.142252	0.027568	0.014115	-0.003638	0.005656	0.032049	0.029178
Dec-95	-0.013928	0.087049	0.007456	0.00901	0.004597	0.003487	-0.010777	0.018154
Jan-96	0.007583	0.09467	-0.014355	0.009955	0.004846	0.004511	-0.006036	0.022316
Feb-96	0.070637	0.081981	0.004433	0.008656	0.000113	0.003898	0.008685	0.019066
Mar-96	0.035255	0.103017	0.017704	0.010106	-0.003839	0.004716	0.052258	0.023573
Apr-96	0.022423	0.128478	0.005459	0.008456	-0.004745	0.005742	0.09116	0.029481
May-96	0.070731	0.101578	0.003586	0.006669	-0.015745	0.004586	0.097291	0.023987
Jun-96	-0.050238	0.067868	0.000682	0.004427	0.004255	0.003074	-0.041132	0.015967
Jul-96	0.104437	0.089462	0.007096	0.005772	0.006153	0.004	-0.063862	0.020924
Aug-96	0.135877	0.081309	0.005565	0.005257	0.001635	0.003653	0.022042	0.019231
Sep-96	0.07151	0.080454	0.002995	0.005028	0.000286	0.003574	0.002565	0.01874
Oct-96	0.011495	0.091359	-0.005385	0.005654	-0.000283	0.004076	-0.006474	0.021168
Nov-96	0.0926	0.087105	-0.000819	0.005409	0.00546	0.003905	-0.038671	0.020358
Dec-96	0.02336	0.091689	0.008686	0.005688	0.010649	0.004112	-0.041127	0.02147
Jan-97	-0.025561	0.09695	0.018913	0.007811	-0.01133	0.005614	0.127119	0.030376
Feb-97	0.160965	0.096125	-0.003345	0.007831	-0.008729	0.005629	0.047386	0.030526
Mar-97	0.063618	0.081917	0.002442	0.00671	0.006829	0.004831	-0.051938	0.026338

Apr-97	-0.024117	0.069208	0.011611	0.005394	-0.004292	0.004009	0.033026	0.022034
May-97	0.061833	0.080669	0.013064	0.006333	-0.000197	0.004864	0.003371	0.027012
Jun-97	-0.016214	0.069894	-0.006816	0.00553	0.007672	0.004197	-0.065494	0.023145
Jul-97	0.127992	0.071729	0.005645	0.005716	0.01208	0.004242	-0.074045	0.023192
Aug-97	0.01899	0.077307	0.004921	0.005981	0.008882	0.00458	-0.00217	0.025155
Sep-97	0.035022	0.068798	-0.00037	0.005289	0.008578	0.004034	-0.00758	0.022007
Oct-97	0.022676	0.099696	-0.000719	0.007605	-0.007916	0.0058	0.040518	0.031526
Nov-97	0.070826	0.086968	0.014748	0.006584	0.001778	0.004968	0.005383	0.026796
Dec-97	0.061061	0.073603	0.007244	0.005579	0.005241	0.00419	-0.018321	0.02271
Jan-98	0.49374	0.138513	0.002458	0.006555	0.00217	0.004834	-0.019185	0.025328
Feb-98	0.023466	0.132509	-0.024732	0.006168	0.014999	0.004617	-0.064012	0.024279
Mar-98	0.469146	0.181012	-0.003599	0.00853	-0.010787	0.006258	0.080917	0.032231
Apr-98	-0.099506	0.117166	-0.007426	0.005792	0.004505	0.004085	-0.020003	0.020941
May-98	-0.026777	0.148093	0.004763	0.007455	-0.002955	0.005204	0.059846	0.02652
Jun-98	0.315201	0.23327	-0.014891	0.011253	-0.009473	0.008247	-0.025469	0.041278
Jul-98	0.328974	0.140442	-0.017932	0.007194	0.001899	0.004995	-0.091488	0.02549
Aug-98	-0.184232	0.143198	-0.004283	0.007348	-0.003487	0.005035	-0.086614	0.025765
Sep-98	-0.110074	0.187301	0.000559	0.00958	0.00885	0.006445	-0.088095	0.033073
Oct-98	0.180533	0.154104	-0.004627	0.007951	0.017247	0.005306	-0.092231	0.027244
Nov-98	-0.122237	0.157058	-0.001047	0.011664	0.002766	0.005542	0.015368	0.027957
Dec-98	0.156765	0.156946	-0.008901	0.011665	0.000346	0.005516	-0.01107	0.027874
Jan-99	0.176867	0.120646	-0.001057	0.012277	0.00775	0.006438	-0.013613	0.031515
Feb-99	0.064496	0.104764	-0.005214	0.010337	-0.000695	0.005544	0.044995	0.027244
Mar-99	0.208637	0.118159	0.019861	0.012035	-0.004116	0.006325	0.073093	0.031524
Apr-99	0.022567	0.165757	0.002095	0.016758	-0.021021	0.008806	0.207874	0.043693
May-99	-0.066193	0.091973	0.002532	0.009266	-0.007802	0.004972	0.037629	0.024832
Jun-99	0.043876	0.084701	0.00521	0.008477	0.008062	0.004565	-0.010384	0.022549
Jul-99	0.265111	0.127381	-0.010688	0.012746	-0.017941	0.006802	0.091271	0.032943
Aug-99	0.071158	0.089894	0.006207	0.009003	0.001306	0.004837	0.031307	0.022974
Sep-99	0.082673	0.087225	-0.005066	0.008985	-0.008943	0.004664	-0.003503	0.021906
Oct-99	0.115317	0.126385	-0.014647	0.013084	-0.011691	0.006675	0.055555	0.03112
Nov-99	0.191262	0.334165	-0.006477	0.035497	-0.043376	0.017868	0.324637	0.084228
Dec-99	0.21514	0.157906	-0.017209	0.016606	-0.010584	0.008455	0.072852	0.039741
Jan-00	0.038419	0.098614	-0.01573	0.017109	-0.036198	0.007571	0.158303	0.036077
Feb-00	0.230659	0.098326	-0.069488	0.0172	-0.02288	0.007536	0.067143	0.036297
Mar-00	-0.048465	0.079919	0.023644	0.014104	0.019847	0.006059	-0.065299	0.029304
Apr-00	-0.078274	0.073928	0.018267	0.013792	0.022919	0.005637	-0.132063	0.027542
May-00	-0.137645	0.063998	0.027424	0.011963	0.008843	0.004933	-0.034341	0.023882
Jun-00	0.097514	0.074507	-0.00295	0.014169	0.003167	0.00574	0.024886	0.027902
Jul-00	-0.015136	0.071553	-0.001611	0.013578	2.14E-05	0.005509	0.021805	0.026711
Aug-00	-0.00413	0.06537	-0.023436	0.012275	-0.002217	0.005008	0.037828	0.024416
Sep-00	-0.118521	0.057088	-0.012475	0.010676	-0.006591	0.004417	-0.004549	0.021211
Oct-00	-0.12178	0.06013	0.014849	0.010733	0.019486	0.004574	-0.096579	0.022175

Nov-00	-0.222321	0.079106	0.058346	0.013543	0.019866	0.006101	-0.063366	0.03009
Dec-00	-0.261507	0.068121	-0.011227	0.011113	0.001852	0.005263	0.024876	0.025972
Jan-01	0.256121	0.138904	0.013985	0.013207	0.002404	0.006442	0.027854	0.032159
Feb-01	-0.019604	0.100073	0.052711	0.008852	-0.001061	0.004626	0.011386	0.022947
Mar-01	-0.038779	0.130449	0.040963	0.011711	-0.00054	0.006017	-0.05684	0.029858
Apr-01	0.021458	0.103072	0.005754	0.009991	0.01048	0.004716	-0.006309	0.023303
May-01	0.052127	0.098486	0.009038	0.01	-0.003951	0.004483	0.045449	0.021997
Jun-01	0.115148	0.135058	0.037992	0.013352	0.007761	0.006043	-0.082256	0.029872
Jul-01	-0.078076	0.114995	0.054352	0.011478	0.00848	0.005159	-0.058816	0.025367
Aug-01	-0.121421	0.107403	0.022991	0.010611	-0.001591	0.004864	0.025909	0.02419
Sep-01	-0.154725	0.128379	0.042917	0.013211	0.009164	0.005846	-0.200084	0.029033
Oct-01	0.746387	0.257894	-0.046883	0.017799	-0.006299	0.008011	0.032567	0.037613
Nov-01	0.075075	0.263406	-0.031528	0.019603	-0.002611	0.008257	0.097153	0.03915
Dec-01	-0.082563	0.17232	-0.009366	0.012757	-0.003289	0.005416	0.012673	0.025702
Jan-02	0.038323	0.120217	0.028281	0.009232	-0.002778	0.004818	0.01255	0.021738
Feb-02	-0.083491	0.132101	0.019572	0.01039	0.003246	0.005282	-0.029958	0.023638
Mar-02	0.239545	0.168858	0.007984	0.013302	0.003527	0.006602	0.020549	0.029084
Apr-02	-0.185226	0.15567	0.009037	0.012172	0.003145	0.005935	0.010667	0.026657
May-02	0.02016	0.131774	0.010588	0.010324	-0.002972	0.004965	0.014916	0.022284
Jun-02	0.093095	0.103179	0.019448	0.008028	-0.002787	0.003875	-0.071434	0.017112
Jul-02	0.152524	0.116789	0.006773	0.009306	-0.008995	0.004383	-0.065472	0.019377
Aug-02	0.125518	0.150982	0.006074	0.012019	0.010963	0.005603	-0.072629	0.024577
Sep-02	0.023442	0.165114	-0.003742	0.013501	-0.007538	0.006173	-0.096273	0.025774
Oct-02	-0.179787	0.199123	-0.014409	0.015819	0.003026	0.007322	0.036615	0.031192
Nov-02	0.326913	0.171265	0.017694	0.013854	-0.013115	0.006299	0.120244	0.027455
Dec-02	0.079155	0.156218	0.009597	0.012495	-0.005807	0.005729	-0.012401	0.024894
Jan-03	-0.072969	0.107206	0.013701	0.011216	-0.00073	0.004924	-0.02895	0.021196
Feb-03	0.091744	0.095317	0.000363	0.009947	0.007492	0.004375	-0.050582	0.018709
Mar-03	0.130297	0.140055	-0.004618	0.006726	0.003091	0.003165	-0.034253	0.020631
Apr-03	-0.050475	0.138692	-0.007705	0.016154	0.007718	0.00634	0.077051	0.027198
May-03	0.112186	0.14145	-0.00051	0.017065	-0.009796	0.006414	0.15162	0.027387
Jun-03	0.197165	0.150739	0.017056	0.018075	-0.01709	0.006842	0.145962	0.028741
Jul-03	0.032281	0.124244	-0.013106	0.015472	0.004317	0.005788	0.04043	0.024005
Aug-03	-0.006619	0.125691	0.011589	0.015674	-0.018514	0.005865	0.185079	0.024295
Sep-03	0.070632	0.122991	-0.022738	0.014848	-0.009161	0.005621	0.021455	0.022906
Oct-03	0.086322	0.126404	0.027931	0.015227	-0.008666	0.005744	0.098197	0.023445
Nov-03	0.03175	0.090859	0.006507	0.011117	0.003768	0.004124	-0.027839	0.016897
Dec-03	0.091269	0.086213	-0.014205	0.010238	-0.002089	0.003922	0.020254	0.016086
Jan-04	0.070982	0.140589	-0.045498	0.019136	-0.027444	0.00744	0.1742	0.030909
Feb-04	0.027032	0.09777	-0.044783	0.013199	-0.007325	0.00516	0.066576	0.02136
Mar-04	-0.021343	0.070435	0.000515	0.009213	0.016433	0.003706	-0.087419	0.015292
Apr-04	-0.045534	0.070322	0.014022	0.008834	0.001011	0.003646	0.014655	0.01513
May-04	0.022003	0.053164	0.011976	0.006835	0.002794	0.002759	-0.038287	0.011637

Jun-04	-0.052389	0.090913	-0.006184	0.011631	-0.000462	0.004737	0.040238	0.020281
Jul-04	-0.119229	0.0687	0.013383	0.008726	0.009338	0.003603	-0.062062	0.015674
Aug-04	0.104956	0.063152	0.000401	0.008181	0.001196	0.003337	-0.013955	0.014983
Sep-04	-0.135665	0.07091	0.000168	0.009082	0.003702	0.00377	0.02139	0.016671
Oct-04	0.082049	0.06352	0.001874	0.008204	-0.001119	0.003415	0.019963	0.015518
Nov-04	0.049857	0.091416	-0.001676	0.011975	0.006093	0.004953	-0.011572	0.022808
Dec-04	-0.029152	0.072964	0.006554	0.009469	0.014222	0.003945	-0.032208	0.017967
Jan-05	-0.027633	0.046611	0.014702	0.008797	-0.002627	0.00387	0.066706	0.019174
Feb-05	-0.020338	0.052951	0.011276	0.009705	-0.000744	0.004408	0.033686	0.022004
Mar-05	-0.04493	0.054316	0.002649	0.007188	0.009679	0.003359	-0.064175	0.015961
Apr-05	-0.081463	0.07225	0.018151	0.010319	0.006805	0.004561	-0.052879	0.021883
May-05	0.01632	0.056876	-0.014629	0.008215	0.008768	0.003596	-0.031674	0.017045
Jun-05	0.05878	0.056781	0.01714	0.008559	0.003604	0.003604	0.01875	0.017418
Jul-05	0.043586	0.066434	0.004239	0.009638	0.003873	0.004214	0.003694	0.020391
Aug-05	0.001611	0.132808	-0.015522	0.019566	-0.002015	0.008466	0.029118	0.040651
Sep-05	0.00608	0.083987	0.021163	0.012389	-0.00031	0.005367	0.021605	0.02584
Oct-05	-0.049807	0.055959	0.024727	0.008202	0.008645	0.003608	-0.070313	0.017627
Nov-05	0.050605	0.067741	-0.004185	0.009778	0.004571	0.004341	0.01687	0.021391
Dec-05	-0.005111	0.052691	-0.004168	0.007495	0.017494	0.00334	-0.060767	0.016402
Jan-06	0.122008	0.092026	0.038088	0.013249	-0.011485	0.005234	0.102206	0.025889
Feb-06	0.12055	0.115557	0.060683	0.016948	-0.008631	0.006587	0.128271	0.033096
Mar-06	-2.28E-05	0.11168	-0.054702	0.016479	-0.007928	0.006295	0.040485	0.030769
Apr-06	0.023151	0.06947	-0.007358	0.010436	-0.007672	0.003998	0.045636	0.018922
May-06	-0.03875	0.070082	0.015827	0.010448	0.000664	0.003998	-0.026805	0.018953
Jun-06	-0.027128	0.072727	0.014501	0.01009	0.014769	0.004122	-0.057786	0.019663
Jul-06	-0.008196	0.06554	-0.010167	0.009595	5.11E-06	0.003762	-0.008318	0.017563
Aug-06	0.012148	0.068089	-0.001259	0.009979	0.00279	0.00393	-0.00232	0.018274
Sep-06	0.032145	0.060904	0.031662	0.009206	0.005858	0.003537	0.027898	0.016305
Oct-06	0.007854	0.063697	0.020378	0.01025	0.006959	0.003708	0.00446	0.016933
Nov-06	-0.011555	0.060537	-0.004941	0.009738	0.003077	0.003538	0.002222	0.016234
Dec-06	0.076967	0.10941	0.007772	0.017298	-0.009508	0.006378	0.108802	0.029533
Jan-07	0.038396	0.111964	-0.014368	0.012584	-0.004828	0.005038	0.027995	0.022764
Feb-07	0.07879	0.080686	0.015885	0.009422	-0.001215	0.003692	0.016977	0.016869
Mar-07	0.09368	0.100565	-0.006395	0.011784	-0.002823	0.004595	0.031611	0.021431
Apr-07	0.071993	0.154685	-0.035027	0.018454	-0.012695	0.00686	0.063166	0.031793
May-07	0.11497	0.095938	0.008461	0.011623	-0.00346	0.004222	0.04605	0.019493
Jun-07	0.094037	0.123987	-0.030135	0.016912	-0.018369	0.005472	0.049806	0.024863
Jul-07	0.005673	0.230991	-0.04541	0.031889	-0.022895	0.010197	0.085538	0.045934
Aug-07	-0.117551	0.066286	0.004482	0.009103	0.011424	0.002945	-0.078265	0.013307
Sep-07	0.122922	0.088517	0.007526	0.012381	-0.001695	0.003935	-0.028764	0.017973
Oct-07	0.266772	0.097907	-0.02268	0.013841	-0.003249	0.004323	0.00375	0.020139
Nov-07	0.207679	0.101754	-0.004029	0.014176	-0.005146	0.004499	-0.079336	0.021046
Dec-07	0.013429	0.102264	0.012857	0.013797	0.005445	0.004509	-0.037318	0.021464

Jan-08	-0.09223	0.177657	0.013708	0.013204	0.008025	0.005484	-0.095917	0.021052
Feb-08	0.279389	0.288425	-0.057084	0.021382	-0.025978	0.008906	0.092508	0.034484
Mar-08	-0.128775	0.22538	0.020033	0.016384	0.010744	0.006902	-0.056274	0.027103
Apr-08	0.098228	0.225957	-0.00884	0.014953	0.000299	0.006861	0.005784	0.027936
May-08	0.139102	0.206994	-0.038642	0.013674	-0.011806	0.006235	0.006898	0.02574
Jun-08	-0.353751	0.230481	0.003965	0.015101	0.004536	0.007138	-0.071559	0.029899
Jul-08	0.032085	0.276606	0.023776	0.016798	0.019648	0.008671	-0.13895	0.036061
Aug-08	0.166065	0.216815	0.032328	0.013365	0.003899	0.006766	0.038603	0.027938
Sep-08	-0.468425	0.265691	0.035288	0.01653	0.017905	0.008321	-0.180907	0.034239
Oct-08	-0.126079	0.286325	-0.035345	0.019273	-0.006088	0.008976	-0.156311	0.036374
Nov-08	-0.528935	0.316268	-0.011881	0.022202	0.01494	0.009814	-0.09232	0.039132
Dec-08	0.703003	0.583518	-0.003393	0.019572	0.019939	0.008459	-0.068044	0.035387

Panel C

	$BA_{i,t-1\to t-12}$	Std deviation	$TO_{i,t-1\to t-12}$	Std deviation	$\left[\ln \frac{B}{M}\right]_{i,t-1}$	Std deviation	$\ln MV_{i,t-1}$	Std deviation	Constant	Std deviation
Jan-93	0.475097	0.702478	0.263047	0.198852	0.050684	0.066209	-0.005901	0.021224	0.156369	0.106171
Feb-93	-0.267019	0.339086	0.115744	0.097065	0.038183	0.013347	-0.007134	0.007323	0.078085	0.050673
Mar-93	0.285637	0.335232	0.082892	0.098068	0.057565	0.013709	0.004907	0.007617	0.009239	0.051603
Apr-93	0.318187	0.393082	0.079822	0.114911	0.007831	0.016181	-0.004791	0.008844	0.046569	0.060639
May-93	1.053431	0.582676	0.00731	0.164408	0.028146	0.022442	0.005636	0.013114	-0.029904	0.088557
Jun-93	0.116859	0.322396	0.043449	0.090284	0.015751	0.012117	-0.00683	0.00684	0.069615	0.047844
Jul-93	-0.449433	0.30077	0.029993	0.083746	0.030751	0.011113	0.00101	0.00667	0.045447	0.04429
Aug-93	-0.132407	0.275375	0.045601	0.079415	0.004701	0.010009	-0.009732	0.006231	0.127208	0.040785
Sep-93	0.256613	0.324732	0.064654	0.092289	0.010161	0.012157	0.005125	0.00749	-0.052606	0.048775
Oct-93	0.239585	0.345107	0.18231	0.1027	0.016148	0.013492	0.002619	0.007798	0.005142	0.051311
Nov-93	-0.008929	0.268306	0.113945	0.079601	0.006557	0.010569	0.013119	0.006071	-0.096142	0.039778
Dec-93	0.608645	0.329222	-0.084414	0.09705	-0.000995	0.012845	0.005251	0.007471	0.028705	0.049389
Jan-94	-0.113417	0.470198	0.134715	0.140089	0.009681	0.014953	-0.023243	0.009082	0.225388	0.058938
Feb-94	-0.060657	0.393409	-0.021448	0.116888	-0.008315	0.012522	-0.009712	0.007564	0.035955	0.049423
Mar-94	0.492187	0.273634	0.148515	0.073	0.004647	0.008869	0.009463	0.005245	-0.136554	0.034918
Apr-94	-0.365357	0.334709	0.047615	0.088535	-0.009711	0.010884	-0.009871	0.006448	0.07049	0.043193
May-94	0.185393	0.29361	0.017092	0.086285	0.007618	0.01064	-0.006515	0.006066	-0.006907	0.039972
Jun-94	-0.037792	0.250121	0.101031	0.073334	-0.005486	0.009317	0.008052	0.005304	-0.094603	0.034516
Jul-94	-0.113521	0.254359	-0.001215	0.07536	0.022897	0.0099	0.012024	0.005263	0.004956	0.034994
Aug-94	-0.072153	0.292125	0.010109	0.080792	0.000402	0.010857	0.006354	0.005703	0.005165	0.038867
Sep-94	-0.353332	0.257395	0.048034	0.069888	0.003222	0.009278	-0.010617	0.004982	-0.00127	0.034214
Oct-94	0.241663	0.243831	-0.028232	0.066959	0.007016	0.008814	0.014679	0.004755	-0.096681	0.032654
Nov-94	0.088024	0.277459	0.071736	0.07651	0.002555	0.009941	0.006135	0.005392	-0.05019	0.036836
Dec-94	-0.302174	0.226827	-0.045626	0.008295	0.004476	0.004401	0.000984	0.061926	0.004944	0.030642
Jan-95	0.252811	0.217239	0.117045	0.071531	0.000255	0.007086	-0.000661	0.003988	-0.037285	0.027372
Feb-95	-0.492489	0.292616	0.000408	0.099002	0.016269	0.009499	0.004468	0.005382	-0.012264	0.036922
Mar-95	-0.621645	0.318688	-0.081169	0.108557	-0.006299	0.010524	-0.000219	0.005878	0.040742	0.03975

Apr-95	-0.183213	0.465835	0.315114	0.157754	-2.43E-06	0.015339	-0.003038	0.008619	0.029173	0.05886
May-95	0.33056	0.447263	-0.000356	0.151261	0.000975	0.015031	-0.002972	0.008302	0.064201	0.056326
Jun-95	-0.219359	0.246529	0.128597	0.08321	0.000575	0.008923	-0.001803	0.004548	-0.015357	0.030636
Jul-95	-0.36264	0.341969	0.153649	0.114698	0.004142	0.012234	0.000367	0.006198	0.066404	0.042132
Aug-95	0.636231	0.507563	0.105486	0.168269	-0.039608	0.017942	-0.010302	0.00908	0.042957	0.062396
Sep-95	0.193087	0.333956	0.230497	0.119709	-0.014495	0.012512	0.00212	0.006382	-0.02685	0.042767
Oct-95	0.388135	0.324322	0.206455	0.107483	-5.32E-05	0.0109	0.004775	0.005731	-0.071308	0.038319
Nov-95	0.819767	0.425975	0.378446	0.140898	0.0216	0.014314	0.005974	0.007503	-0.046207	0.04988
Dec-95	-0.193864	0.253632	-0.016907	0.087273	0.008598	0.009147	0.002339	0.004574	0.007605	0.030149
Jan-96	-0.390175	0.261921	0.00013	0.094428	-0.013085	0.009952	-0.000857	0.005903	0.036857	0.036375
Feb-96	-0.091389	0.22903	0.069105	0.082299	0.004759	0.008719	-0.001215	0.005134	0.018671	0.031493
Mar-96	-0.116099	0.26191	0.033661	0.103352	0.017542	0.010139	-0.005779	0.006444	0.065997	0.038977
Apr-96	-1.053237	0.313433	0.016292	0.124376	0.009263	0.008263	-0.02225	0.007617	0.218252	0.047379
May-96	-0.129038	0.255426	0.06991	0.10184	0.004027	0.006742	-0.017883	0.006249	0.112942	0.039218
Jun-96	-0.135193	0.17201	-0.050608	0.067955	0.001157	0.004473	0.001974	0.00423	-0.024611	0.026409
Jul-96	0.277168	0.228157	0.104289	0.089323	0.006079	0.005824	0.010825	0.005544	-0.097937	0.034975
Aug-96	-0.302389	0.208309	0.137355	0.081021	0.006808	0.005308	-0.003552	0.0051	0.059855	0.032338
Sep-96	0.022572	0.207324	0.071359	0.08073	0.002911	0.005103	0.000674	0.005055	-0.00025	0.031972
Oct-96	-0.015809	0.234614	0.011645	0.091691	-0.005328	0.005735	-0.000556	0.005753	-0.004508	0.036087
Nov-96	0.111247	0.218579	0.091515	0.087348	-0.001167	0.005465	0.007358	0.005406	-0.052418	0.033854
Dec-96	-0.019465	0.22956	0.023563	0.092027	0.008746	0.005751	0.010317	0.005686	-0.038721	0.035629
Jan-97	-0.152386	0.314211	-0.027789	0.097326	0.019298	0.007873	-0.013863	0.007679	0.145873	0.049224
Feb-97	0.29837	0.355986	0.164629	0.096328	-0.004726	0.008011	-0.004087	0.007901	0.012021	0.052098
Mar-97	0.238496	0.306849	0.066354	0.082111	0.00126	0.00689	0.010608	0.006859	-0.080693	0.045436
Apr-97	0.005076	0.269394	-0.024072	0.0695	0.011586	0.005575	-0.004209	0.005972	0.032395	0.040154
May-97	-0.032709	0.30675	0.061652	0.080979	0.013217	0.006515	-0.00075	0.007122	0.007537	0.047553
Jun-97	-0.634037	0.25914	-0.020296	0.068676	-0.003887	0.005562	-0.002948	0.005986	0.014281	0.039749
Jul-97	-0.028084	0.270147	0.127839	0.072006	0.005776	0.005874	0.011617	0.006155	-0.070579	0.040661
Aug-97	-0.449575	0.292855	0.019172	0.076924	0.006997	0.006103	0.00132	0.006711	0.054479	0.04459
Sep-97	-0.119152	0.264861	0.035637	0.069014	0.000236	0.005473	0.006576	0.006014	0.007435	0.040014
Oct-97	-1.15803	0.378271	0.030447	0.096796	0.005221	0.007632	-0.027451	0.008509	0.186723	0.056719
Nov-97	0.424797	0.333122	0.066893	0.086824	0.012678	0.006767	0.008755	0.007383	-0.046978	0.048998
Dec-97	0.041599	0.281119	0.060721	0.073905	0.007047	0.005756	0.005917	0.006207	-0.023427	0.041352
Jan-98	-0.244599	0.223355	0.48992	0.13847	0.002911	0.006564	-0.001789	0.006034	0.0111	0.03749
Feb-98	-0.021409	0.215907	0.023057	0.13299	-0.024693	0.006199	0.01465	0.005818	-0.061335	0.036358
Mar-98	0.272943	0.233143	0.477137	0.180931	-0.004886	0.00859	-0.005408	0.007758	0.040677	0.047094
Apr-98	0.351673	0.155419	-0.093211	0.11571	-0.0102	0.005849	0.011152	0.00499	-0.070749	0.030503
May-98	-0.37295	0.208391	-0.027037	0.147065	0.008195	0.007647	-0.009849	0.006445	0.112394	0.039443
Jun-98	0.025364	0.339803	0.3154	0.234032	-0.015027	0.011435	-0.009042	0.010085	-0.028741	0.060308
Jul-98	0.701158	0.206079	0.321312	0.135873	-0.024236	0.007202	0.014451	0.006079	-0.18632	0.037213
Aug-98	-0.352716	0.214796	-0.180007	0.142434	-0.001112	0.007559	-0.009818	0.00632	-0.038458	0.038943
Sep-98	-0.140533	0.28657	-0.107258	0.187852	0.001907	0.009989	0.006353	0.008225	-0.068957	0.051207
Oct-98	-0.196305	0.230908	0.183249	0.154275	-0.002826	0.008235	0.01385	0.006646	-0.065983	0.041192

Nov-98	0.089108	0.233382	-0.123047	0.157522	-0.001823	0.011872	0.004307	0.006867	0.003417	0.04202
Dec-98	0.272342	0.225066	0.157426	0.156701	-0.010399	0.011712	0.004885	0.006664	-0.04643	0.040354
Jan-99	-0.357326	0.225861	0.156242	0.120856	-0.002159	0.012246	0.001591	0.007501	0.03277	0.042949
Feb-99	-0.201012	0.198199	0.053195	0.105347	-0.00642	0.010405	-0.004259	0.006564	0.071213	0.037555
Mar-99	-0.149562	0.225126	0.20115	0.118878	0.019253	0.012089	-0.006847	0.007552	0.093266	0.043805
Apr-99	1.138151	0.304867	0.073351	0.16068	0.005012	0.016206	-3.85E-05	0.010194	0.051765	0.05941
May-99	0.173918	0.173911	-0.058687	0.092278	0.003228	0.009292	-0.004635	0.005895	0.014043	0.034248
Jun-99	-0.098072	0.160443	0.039699	0.085127	0.004849	0.008513	0.006283	0.005421	0.002835	0.031273
Jul-99	1.002557	0.228303	0.305838	0.121561	-0.006409	0.012168	0.000137	0.00767	-0.042164	0.043657
Aug-99	-0.188992	0.169951	0.063214	0.090116	0.005459	0.009022	-0.002113	0.005729	0.056252	0.032098
Sep-99	-0.029194	0.1658	0.081526	0.087714	-0.005154	0.009025	-0.00947	0.005552	0.000318	0.030877
Oct-99	-0.137477	0.240186	0.110385	0.126929	-0.014935	0.01312	-0.014115	0.007916	0.073267	0.043931
Nov-99	-0.159335	0.643592	0.186441	0.33568	-0.006483	0.035597	-0.046275	0.021404	0.345856	0.120336
Dec-99	0.00195	0.303897	0.215196	0.158623	-0.017211	0.016658	-0.010548	0.010097	0.072593	0.05673
Jan-00	0.037689	0.343926	0.039368	0.099262	-0.015823	0.017177	-0.035532	0.009724	0.153262	0.058515
Feb-00	-0.232834	0.348588	0.225516	0.098778	-0.068498	0.01729	-0.027049	0.009794	0.098984	0.059951
Mar-00	0.370332	0.28165	-0.043086	0.079864	0.021655	0.014157	0.026431	0.007851	-0.116041	0.048421
Apr-00	0.337651	0.258825	-0.074685	0.073837	0.016102	0.013866	0.02894	0.007277	-0.17901	0.045285
May-00	-0.260256	0.225177	-0.140761	0.063995	0.029759	0.012121	0.004323	0.006291	0.001597	0.039194
Jun-00	-0.715416	0.253993	0.08863	0.073172	0.002842	0.014053	-0.009166	0.007134	0.123456	0.044432
Jul-00	0.495634	0.247809	-0.012302	0.070968	-0.006229	0.013661	0.008637	0.006957	-0.047222	0.043505
Aug-00	-0.476432	0.221079	-0.005822	0.064708	-0.019808	0.012266	-0.010523	0.006279	0.104022	0.039083
Sep-00	0.186102	0.194854	-0.117911	0.057106	-0.013761	0.010763	-0.00331	0.005597	-0.030274	0.034287
Oct-00	0.055755	0.20231	-0.121693	0.06029	0.014639	0.010789	0.020522	0.005929	-0.104428	0.036134
Nov-00	0.041244	0.267542	-0.221977	0.07936	0.058293	0.013586	0.020627	0.007865	-0.069168	0.048239
Dec-00	-0.116713	0.225593	-0.262421	0.068288	-0.011438	0.011144	-0.000313	0.006732	0.041106	0.040762
Jan-01	-0.174594	0.3525	0.252143	0.139408	0.013584	0.013258	-0.000285	0.008434	0.049617	0.054488
Feb-01	0.030769	0.249611	-0.019039	0.100434	0.052829	0.008926	-0.000578	0.006072	0.007533	0.038807
Mar-01	-0.152828	0.31682	-0.042692	0.130962	0.040099	0.01187	-0.002871	0.007726	-0.038164	0.048928
Apr-01	0.044239	0.260821	0.022025	0.10339	0.005853	0.010034	0.011153	0.006173	-0.01172	0.03954
May-01	-0.284972	0.250685	0.048594	0.098458	0.009078	0.009993	-0.008328	0.005907	0.080899	0.038153
Jun-01	-0.625324	0.33597	0.118365	0.134193	0.038517	0.013268	-0.002111	0.008011	-0.002943	0.051929
Jul-01	0.396791	0.290561	-0.080513	0.114743	0.053695	0.011461	0.014727	0.006886	-0.109241	0.044766
Aug-01	-0.177765	0.280142	-0.11965	0.107613	0.023541	0.010664	-0.004408	0.006591	0.048901	0.043588
Sep-01	0.484333	0.33174	-0.157292	0.127996	0.041672	0.013198	0.016863	0.007859	-0.262516	0.051637
Oct-01	0.279084	0.441089	0.743005	0.258375	-0.04761	0.017865	-0.001917	0.010599	-0.002794	0.0674
Nov-01	0.590477	0.464313	0.067114	0.263027	-0.034683	0.019726	0.006446	0.010893	0.022986	0.070204
Dec-01	-0.179588	0.301451	-0.083309	0.172636	-0.008612	0.012843	-0.006055	0.007141	0.035538	0.046217
Jan-02	-0.743491	0.240673	0.012463	0.118323	0.023854	0.009176	-0.01473	0.006111	0.105805	0.03697
Feb-02	-0.517755	0.271339	-0.098942	0.131596	0.017345	0.010396	-0.005176	0.00686	0.035687	0.041664
Mar-02	-0.466093	0.338292	0.225992	0.168811	0.00655	0.013316	-0.004219	0.008661	0.079842	0.051909
Apr-02	-0.257136	0.308524	-0.193588	0.156098	0.007239	0.01237	-0.001305	0.007986	0.043789	0.047864
May-02	-0.195241	0.261515	0.012599	0.132292	0.009122	0.010519	-0.006394	0.006761	0.040276	0.040637

Jun-02	-0.040515	0.205407	0.091648	0.10366	0.019155	0.008181	-0.003489	0.005268	-0.066244	0.031407
Jul-02	-0.598677	0.233569	0.131901	0.115637	0.002634	0.009333	-0.019204	0.005883	0.009984	0.035113
Aug-02	0.18885	0.302744	0.132969	0.151662	0.007527	0.012259	0.014168	0.007608	-0.0963	0.04523
Sep-02	0.061591	0.326166	0.025665	0.165896	-0.003259	0.013771	-0.006464	0.008404	-0.103994	0.048367
Oct-02	0.540751	0.404626	-0.160233	0.1993	-0.009351	0.016238	0.012341	0.0101	-0.030755	0.059251
Nov-02	0.866057	0.342132	0.359319	0.169625	0.026456	0.014113	0.001716	0.008545	0.012315	0.050528
Dec-02	-0.390269	0.316464	0.065791	0.156404	0.005817	0.012851	-0.012504	0.007889	0.036374	0.046718
Jan-03	-0.464035	0.166701	-0.085316	0.105662	0.006558	0.011339	-0.012029	0.006324	0.050636	0.035399
Feb-03	-0.168858	0.152853	0.088593	0.09531	-0.001487	0.010082	0.00333	0.005772	-0.021153	0.032547
Mar-03	-0.148715	0.169588	0.123474	0.142016	0.013677	0.011549	-0.002418	0.006375	-0.008212	0.036165
Apr-03	0.716789	0.232063	-0.044452	0.135982	-0.004259	0.015876	0.024662	0.00829	-0.04639	0.048043
May-03	0.253286	0.241765	0.113215	0.14142	0.001149	0.017134	-0.003759	0.008621	0.108186	0.049683
Jun-03	1.068567	0.248593	0.200535	0.144782	0.022982	0.017415	0.008454	0.00886	-0.03624	0.050584
Jul-03	-0.65188	0.213694	0.033729	0.121755	-0.015228	0.015177	-0.011267	0.007634	0.150186	0.042987
Aug-03	0.470109	0.225832	-0.005323	0.124658	0.013764	0.01558	-0.007581	0.007837	0.107843	0.04424
Sep-03	0.117331	0.220077	0.070598	0.123211	-0.022097	0.014923	-0.006346	0.007719	0.002157	0.042857
Oct-03	0.148391	0.226594	0.086167	0.126585	0.028677	0.015291	-0.005116	0.007904	0.073776	0.044066
Nov-03	-0.063756	0.162653	0.03193	0.091053	0.006168	0.011174	0.002238	0.005685	-0.017286	0.031804
Dec-03	0.31028	0.152846	0.091011	0.085545	-0.011756	0.01023	0.005375	0.005354	-0.03068	0.029737
Jan-04	0.653984	0.276526	0.061319	0.139038	-0.043499	0.018936	-0.012196	0.00978	0.072457	0.052766
Feb-04	0.085084	0.195432	0.025734	0.098017	-0.044687	0.013228	-0.005337	0.006899	0.053284	0.037286
Mar-04	-0.269457	0.139847	-0.016564	0.069997	0.00016	0.009151	0.010132	0.004924	-0.045508	0.026529
Apr-04	0.060417	0.133927	-0.046678	0.070512	0.014238	0.008865	0.002477	0.00489	0.004903	0.026403
May-04	-0.155983	0.099671	0.024663	0.052994	0.01108	0.006834	-0.000975	0.003655	-0.012985	0.019895
Jun-04	0.157578	0.169381	-0.055238	0.090996	-0.004962	0.011709	0.003385	0.006289	0.014469	0.034334
Jul-04	-0.450462	0.123651	-0.109237	0.066629	0.01102	0.00848	-0.001648	0.004614	0.012436	0.025473
Aug-04	0.074854	0.116689	0.103316	0.063303	0.000838	0.008222	0.003034	0.004403	-0.026485	0.024632
Sep-04	0.094221	0.130602	-0.137746	0.071059	0.000778	0.009133	0.006023	0.00496	0.005651	0.027469
Oct-04	-0.077772	0.115601	0.083632	0.063656	0.00114	0.008288	-0.003046	0.004461	0.032991	0.02483
Nov-04	0.280089	0.164816	0.045197	0.090992	0.001366	0.012048	0.013033	0.0064	-0.058551	0.035765
Dec-04	-0.39064	0.129176	-0.020657	0.071431	0.002407	0.009363	0.004444	0.005035	0.0337	0.027998
Jan-05	-0.039766	0.140957	-0.027561	0.046731	0.014592	0.008828	-0.003307	0.004568	0.071641	0.025991
Feb-05	0.516607	0.155943	-0.021576	0.051544	0.012386	0.009452	0.008191	0.005068	-0.031406	0.029066
Mar-05	-0.19112	0.116977	-0.044301	0.054065	0.002317	0.007158	0.006401	0.003899	-0.040258	0.021603
Apr-05	-0.178554	0.156481	-0.08102	0.072189	0.01783	0.010314	0.003765	0.005279	-0.030681	0.029265
May-05	0.177008	0.122594	0.015926	0.056702	-0.014243	0.008194	0.011768	0.004143	-0.053514	0.02275
Jun-05	-0.318804	0.121225	0.059633	0.055825	0.016827	0.008415	-0.001802	0.004096	0.058508	0.022843
Jul-05	-0.226682	0.144124	0.04367	0.066148	0.003939	0.009598	3.37E-05	0.004854	0.031876	0.027079
Aug-05	-0.065913	0.29169	0.001891	0.13319	-0.015454	0.019623	-0.003155	0.009875	0.037493	0.055096
Sep-05	0.427023	0.181983	0.00504	0.082878	0.020914	0.012226	0.007048	0.006155	-0.032654	0.034422
Oct-05	-0.088205	0.122985	-0.049409	0.056044	0.02488	0.008216	0.00712	0.004193	-0.058984	0.023689
Nov-05	-0.11898	0.148168	0.050983	0.067815	-0.004131	0.009789	0.002535	0.005031	0.032032	0.02855
Dec-05	-0.1574	0.115276	-0.004488	0.052557	-0.00397	0.007477	0.014811	0.003868	-0.040625	0.022028

Jan-06	1.034709	0.211324	0.129094	0.086033	0.039977	0.01239	0.005754	0.006028	-0.030879	0.036392
Feb-06	0.043631	0.285943	0.120781	0.115926	0.060716	0.017002	-0.007897	0.008172	0.122569	0.049987
Mar-06	0.097802	0.277198	0.000523	0.112005	-0.054692	0.016526	-0.006308	0.007806	0.027819	0.047337
Apr-06	0.008834	0.173934	0.023222	0.06971	-0.007359	0.01047	-0.007529	0.004899	0.044515	0.029112
May-06	-0.33823	0.17449	-0.041007	0.069472	0.015466	0.010357	-0.004852	0.004879	0.016086	0.029026
Jun-06	-0.218109	0.182597	-0.028379	0.072634	0.014375	0.010076	0.011219	0.005077	-0.029971	0.03046
Jul-06	0.128332	0.16526	-0.007646	0.065628	-0.010396	0.009612	0.002064	0.004606	-0.024794	0.027558
Aug-06	-0.014824	0.172652	0.012083	0.068317	-0.001231	0.010017	0.002552	0.004823	-0.000407	0.028855
Sep-06	-0.205444	0.152759	0.030573	0.060753	0.031726	0.009182	0.002565	0.004294	0.054178	0.025422
Oct-06	-0.254343	0.159031	0.004595	0.0634	0.020331	0.010197	0.002992	0.004445	0.036342	0.026099
Nov-06	-0.415624	0.149355	-0.015956	0.059225	-0.004591	0.009524	-0.003418	0.004174	0.054977	0.024727
Dec-06	1.437367	0.246146	0.0925	0.098757	0.009313	0.015611	0.013094	0.006936	-0.074011	0.041112
Jan-07	-0.02027	0.185596	0.03893	0.112441	-0.014523	0.012705	-0.005241	0.006311	0.03085	0.034718
Feb-07	-0.320722	0.13335	0.085099	0.079447	0.013879	0.00931	-0.007459	0.004466	0.061171	0.024764
Mar-07	0.539842	0.162471	0.082285	0.097293	-0.003219	0.011434	0.007797	0.005473	-0.043931	0.030761
Apr-07	0.615607	0.228376	0.054444	0.151608	-0.02676	0.018329	0.001234	0.008475	-0.029172	0.046289
May-07	-0.147348	0.144945	0.118546	0.095991	0.006091	0.011853	-0.006795	0.005346	0.067888	0.029006
Jun-07	0.659629	0.182281	0.071726	0.119214	-0.019822	0.016487	-0.003606	0.006652	-0.046845	0.035823
Jul-07	1.570457	0.330004	-0.047051	0.215557	-0.021111	0.030154	0.012192	0.012028	-0.1444	0.064553
Aug-07	0.083938	0.101265	-0.12036	0.066446	0.005884	0.009269	0.013317	0.003729	-0.090607	0.019979
Sep-07	-0.224293	0.135453	0.130836	0.088101	0.004011	0.012486	-0.006792	0.004977	0.004662	0.026955
Oct-07	0.079781	0.152523	0.264407	0.098266	-0.021372	0.014101	-0.001441	0.005544	-0.008153	0.030422
Nov-07	0.243288	0.158188	0.200005	0.101377	-0.000762	0.014265	0.000364	0.005734	-0.116258	0.031858
Dec-07	0.56146	0.152241	-0.004424	0.098012	0.020969	0.013389	0.018204	0.005532	-0.122575	0.030929
Jan-08	-0.453014	0.20505	-0.072932	0.175428	0.009221	0.01318	-0.000193	0.006564	-0.040617	0.032521
Feb-08	1.163189	0.323862	0.223859	0.277172	-0.046565	0.020723	-0.004716	0.010395	-0.050766	0.051827
Mar-08	-0.399084	0.307767	-0.112471	0.22516	0.016722	0.016541	0.004145	0.008562	-0.010754	0.044307
Apr-08	-0.166465	0.305954	0.099618	0.226571	-0.010449	0.015281	-0.002325	0.0084	0.024342	0.044135
May-08	-0.2627	0.282326	0.140685	0.207107	-0.041259	0.013967	-0.015955	0.007668	0.036244	0.040717
Jun-08	-0.5848	0.319676	-0.362322	0.228522	-0.002389	0.015367	-0.004451	0.008614	-0.007149	0.046023
Jul-08	-0.576209	0.381217	0.019498	0.275395	0.016756	0.01735	0.01092	0.010383	-0.07646	0.054746
Aug-08	0.115378	0.303262	0.168325	0.217608	0.033726	0.013903	0.00565	0.008202	0.0261	0.043192
Sep-08	-0.979588	0.365603	-0.487306	0.259689	0.023496	0.016739	0.002972	0.009857	-0.074365	0.051964
Oct-08	0.876185	0.408565	-0.125943	0.282352	-0.030678	0.01913	0.00677	0.010691	-0.251853	0.057196
Nov-08	-1.199627	0.443169	-0.548733	0.308642	-0.019722	0.021853	-0.002254	0.01149	0.036005	0.060868
Dec-08	-0.118968	0.517923	0.526969	0.622022	0.047591	0.019964	0.018438	0.010331	-0.057513	0.058001

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